

Appendix to the report

Usage of Antibiotics in Agricultural Livestock in the Netherlands in 2022

Trends and benchmarking of livestock farms and veterinarians

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DDDA_{NAT} summary

Table A1. DDDA_{NAT} values for the 2018-2022 period, by livestock sector and pharmacotherapeutic group

Pharmacotherapeutic group	Broiler farming sector					Turkey farming sector					Pig farming sector				
	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
1st-choice antibiotics	2.28	2.57	2.55	1.75	1.56	10.82	10.66	8.32	6.73	4.86	6.70	6.26	6.46	5.47	3.93
As a proportion of overall AB use	22.6%	26.0%	27.5%	27.7%	26.7%	52.5%	47.9%	61.1%	51.8%	52.6%	77.2%	78.7%	73.7%	72.3%	68.2%
Amphenicols	*	*	*	*	*	*	*	*	*	*	0.25	0.26	0.32	0.33	0.32
Macrolides/lincosamides	0.03	0.02	0.05	0.06	0.03	*	*	*	*	*	0.77	0.84	0.80	0.44	0.32
Other	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Penicillins	0.44	0.87	0.88	0.58	0.39	2.62	1.61	0.82	0.95	0.66	0.68	0.51	0.53	0.53	0.48
Pleuromutilins	*	*	*	*	*	0.12	*	*	0.09	*	0.12	0.09	0.04	0.03	0.03
Tetracyclines	1.04	0.90	1.00	0.60	0.63	7.15	8.13	7.10	5.36	4.03	3.86	3.54	3.77	3.18	2.11
Trimethoprim/sulfonamides	0.78	0.78	0.62	0.52	0.50	0.93	0.93	0.40	0.33	0.18	1.01	1.01	1.00	0.97	0.68
2nd-choice antibiotics	7.74	7.24	6.63	4.55	4.23	9.06	10.99	4.83	5.88	4.15	1.67	1.36	1.92	1.77	1.58
As a proportion of overall AB use	76.4%	73.1%	71.6%	71.9%	72.4%	43.9%	49.4%	35.5%	45.2%	45.0%	19.3%	17.1%	21.9%	23.4%	27.4%
Aminoglycosides	0.02	0.01	0.00	0.00	0.00	0.00	*	0.00	*	*	0.03	0.03	0.02	0.02	0.02
Aminopenicillins	5.19	5.37	4.90	3.20	2.87	7.52	9.16	3.97	3.79	2.87	1.24	0.97	1.41	1.25	1.08
1st- and 2nd-gen. cephalosporins	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quinolones	2.29	1.62	1.57	1.23	1.16	0.18	0.16	*	0.32	0.06	0.02	0.04	0.03	0.01	0.00
Fixed-dose combinations	0.02	0.01	0.01	0.01	0.04	*	0.01	*	*	*	0.02	0.02	0.02	0.02	0.02
Long-acting macrolides	*	*	*	*	*	*	*	*	*	*	0.37	0.30	0.45	0.46	0.46
Macrolides/lincosamides	0.22	0.24	0.15	0.11	0.16	1.35	1.66	0.86	1.77	1.23	*	*	*	*	*
3rd-choice antibiotics	0.10	0.09	0.08	0.02	0.05	0.75	0.61	0.46	0.38	0.23	0.31	0.34	0.39	0.33	0.25
As a proportion of overall AB use	1.0%	0.9%	0.9%	0.4%	0.9%	3.6%	2.7%	3.4%	3.0%	2.4%	3.6%	4.3%	4.5%	4.4%	4.4%
3rd- and 4th-gen. cephalosporins	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Fluoroquinolones	0.06	0.04	0.03	0.01	0.02	0.75	0.59	0.46	0.38	0.23	0.00	0.00	0.00	0.00	0.00
Polymyxins	0.04	0.05	0.05	0.01	0.03	*	0.02	*	*	*	0.31	0.34	0.39	0.33	0.25
Overall antibiotic use	10.13	9.90	9.26	6.33	5.84	20.62	22.25	13.62	12.99	9.24	8.68	7.96	8.77	7.57	5.77

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				
	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
1st-choice antibiotics	2.40	2.39	2.66	2.67	2.54	16.09	14.15	13.02	13.28	13.99	0.94	0.71	0.65	0.62	0.34
As a proportion of overall AB use	79.0%	79.9%	80.5%	80.6%	80.2%	86.4%	85.6%	85.1%	86.4%	86.3%	86.7%	85.5%	83.7%	82.5%	80.1%
Amphenicols	0.05	0.05	0.05	0.05	0.05	1.33	1.28	1.12	1.07	1.12	0.10	0.08	0.07	0.06	0.04
Macrolides/lincosamides	0.05	0.06	0.08	0.09	0.09	3.21	3.05	2.76	2.85	3.13	0.14	0.11	0.10	0.10	0.05
Other	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Penicillins	1.76	1.75	1.96	1.98	1.89	0.43	0.39	0.36	0.33	0.33	0.10	0.09	0.09	0.09	0.08
Pleuromutilins	*	*	*	*	*	*	*	*	*	*	0.00	0.00	0.00	0.00	0.00
Tetracyclines	0.32	0.30	0.32	0.30	0.26	9.86	8.23	7.80	8.08	8.35	0.53	0.38	0.35	0.33	0.15
Trimethoprim/sulfonamides	0.23	0.24	0.26	0.26	0.25	1.25	1.21	0.98	0.95	1.06	0.06	0.05	0.04	0.04	0.02
2nd-choice antibiotics	0.63	0.59	0.64	0.64	0.62	2.50	2.35	2.26	2.06	2.20	0.14	0.12	0.12	0.13	0.09
As a proportion of overall AB use	20.8%	19.9%	19.3%	19.2%	19.6%	13.4%	14.2%	14.8%	13.4%	13.6%	12.9%	14.2%	15.8%	16.8%	19.6%
Aminoglycosides	0.01	0.01	0.01	0.01	0.01	0.20	0.16	0.12	0.17	0.22	0.01	0.00	0.00	0.00	0.00
Aminopenicillins	0.29	0.28	0.28	0.30	0.26	1.65	1.52	1.48	1.34	1.23	0.06	0.06	0.06	0.06	0.03
1st- and 2nd-gen. cephalosporins	0.03	0.03	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	0.00	0.36	0.41	0.43	0.33	0.44	0.01	0.01	0.02	0.01	0.00
Fixed-dose combinations	0.29	0.27	0.31	0.29	0.30	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.02	0.02	0.02
Long-acting macrolides	0.01	0.01	0.01	0.02	0.02	0.28	0.26	0.23	0.21	0.31	0.03	0.02	0.02	0.02	0.02
Macrolides/lincosamides	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
3rd-choice antibiotics	0.01	0.01	0.01	0.01	0.01	0.04	0.02	0.02	0.03	0.03	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%	0.1%	0.1%	0.2%	0.2%	0.4%	0.3%	0.5%	0.7%	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	0.02	0.01	0.01	0.01	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	0.01	0.02	0.03	0.02	0.00	0.00	0.00	0.00	0.00
Overall antibiotic use	3.04	2.99	3.31	3.32	3.16	18.63	16.52	15.31	15.37	16.22	1.08	0.83	0.78	0.75	0.43

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

Table A1 (continued)

Pharmacotherapeutic group	Rabbit farming sector				
	2018	2019	2020	2021	2022
1st-choice antibiotics	32.66	30.44	35.27	29.54	20.87
As a proportion of overall AB use	74.8%	77.0%	83.3%	84.2%	88.0%
Amphenicols	*	*	*	*	*
Macrolides/lincosamides	2.67	5.15	3.93	6.74	6.22
Other	16.55	13.25	12.54	11.00	9.08
Penicillins	0.00	*	*	*	*
Pleuromutilins	3.37	4.02	3.86	2.74	3.08
Tetracyclines	9.93	7.13	11.22	3.23	2.11
Trimethoprim/sulfonamides	0.13	0.89	3.73	5.82	0.38
2nd-choice antibiotics	10.46	8.39	7.09	5.53	2.84
As a proportion of overall AB use	24.0%	21.2%	16.7%	15.8%	12.0%
Aminoglycosides	10.22	8.33	6.97	5.09	2.48
Aminopenicillins	*	*	*	*	*
1st- and 2nd-gen. cephalosporins	*	*	*	*	*
Quinolones	*	*	0.12	0.44	0.35
Fixed-dose combinations	*	*	*	*	*
Long-acting macrolides	0.24	0.05	*	*	*
Macrolides/lincosamides	*	*	*	*	*
3rd-choice antibiotics	0.57	0.68	0.00	0.00	0.00
As a proportion of overall AB use	1.3%	1.7%	0.0%	0.0%	0.0%
3rd- and 4th-gen. cephalosporins	*	*	*	*	*
Fluoroquinolones	0.29	0.11	*	*	*
Polymyxins	0.28	0.57	*	*	*
Overall antibiotic use	43.69	39.51	42.35	35.07	23.71

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 %														DDDA _{NAT} 2022
		'10	'11	'12	'13	'14	'15	'16	'17	'18	'19	'20	'21	'22		
Broiler farming sector	36.76	37	43	52	65	57	60	72	74	72	73	75	83	84	5.84	
Pig farming sector	20.51	26	29	30	51	54	56	57	58	58	61	57	63	72	5.77	
Dairy cattle farming sector	5.78	-10	-1	30	30	43	46	48	47	47	48	43	43	45	3.16	
Veal farming sector*	33.80	9	14	24	36	37	35	38	40	45	51	55	55	52	16.22	

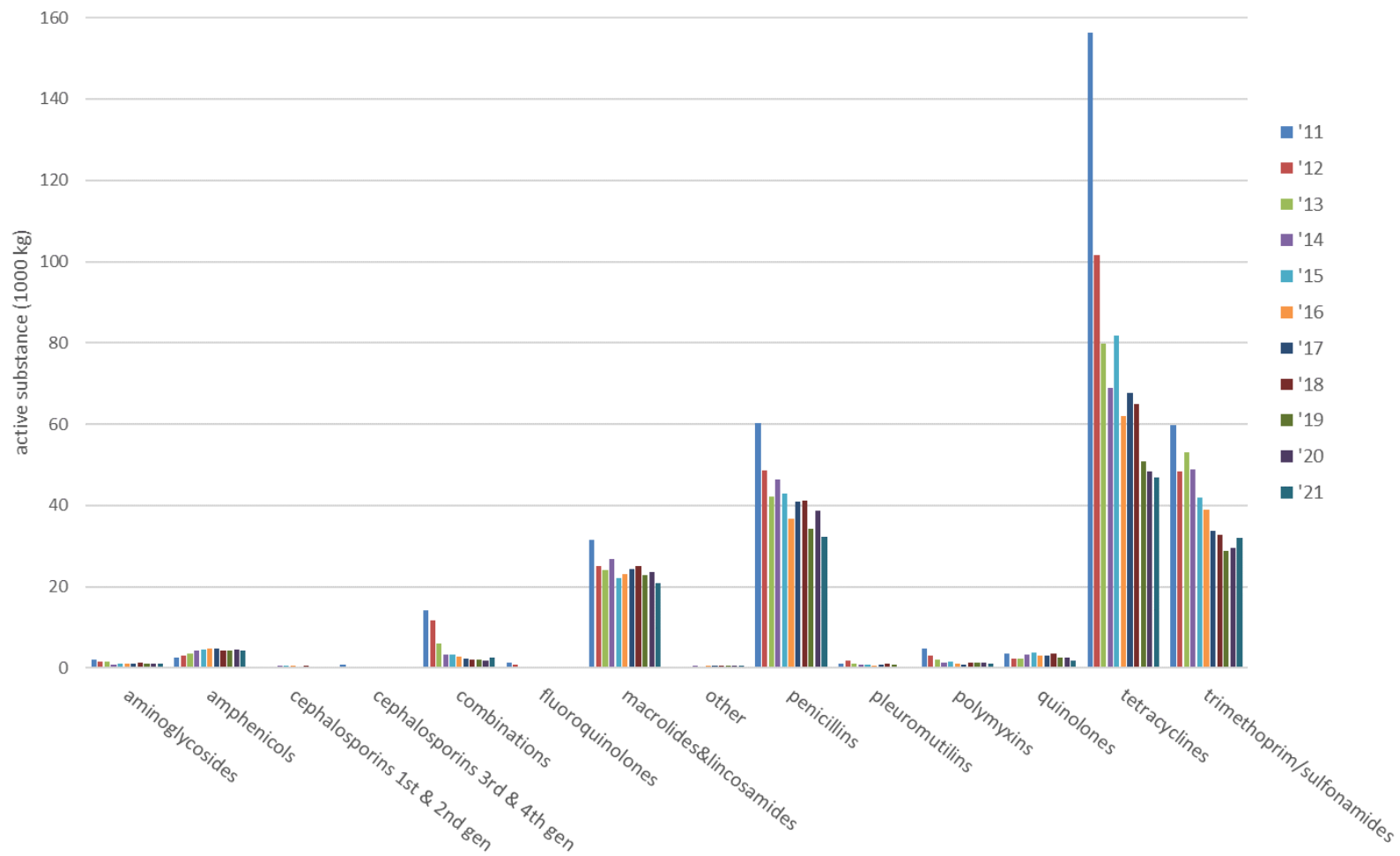
* In 2021, the reduction from its 2007 level amounted to 61%.

Mass balance

Table A3. Kilograms of antibiotics used (by livestock sector and for all livestock sectors combined) and sold in 2022, 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 poultry farming subsectors	All livestock sectors combined	
1st-choice antibiotics	2,255	739	29,919	9,406	38,361	2,340	153	1,703	84,876	85,848
As a proportion of overall AB use/sales	42.4%	82.1%	76.0%	80.4%	84.1%	81.6%	78.8%	83.9%	78.6%	77.0%
Amphenicols	0	0	1,461	472	2,017	257	0	0	4,207	4,287
Fixed-dose combinations	0	0	0	0	0	0	0	0	0	354
Macrolides/lincosamides	432	334	2,688	596	13,841	618	46	584	19,140	18,449
Other	0	0	0	0	0	0	40	0	40	638
Penicillins	301	38	3,781	3,263	425	244	0	477	8,528	8,345
Pleuromutilins	0	0	211	0	0	0	38	63	312	305
Tetracyclines	540	349	12,840	1,413	17,098	930	13	445	33,628	31,105
Trimethoprim/sulfonamides	982	17	8,937	3,663	4,981	291	16	135	19,021	22,365
2nd-choice antibiotics	3,050	153	8,744	2,271	7,249	526	41	219	22,252	24,737
As a proportion of overall AB use/sales	57.3%	17.0%	22.2%	19.4%	15.9%	18.3%	21.2%	10.8%	20.6%	22.2%
Aminoglycosides	13	0	186	312	453	22	38	120	1,144	839
Aminopenicillins	2,411	151	7,955	1,313	5,349	330	0	67	17,575	19,277
1st- and 2nd-gen. cephalosporins	0	0	0	20	0	0	0	0	20	381
Quinolones	531	2	307	2	1,417	44	3	32	2,337	2,275
Fixed-dose combinations	95	0	202	618	12	126	0	0	1,054	1,804
Long-acting macrolides	0	0	93	6	19	4	0	0	122	162
3rd-choice antibiotics	15	8	683	19	19	2	0	108	854	956
As a proportion of overall AB use/sales	0.3%	0.9%	1.7%	0.2%	0.0%	0.1%	0.0%	5.3%	0.8%	0.9%
3rd- and 4th-gen. cephalosporins	0	0	0	0	0	0	0	0	0	3
Fluoroquinolones	10	8	0	15	5	1	0	8	48	100
Polymyxins	5	0	683	4	14	1	0	100	806	854
Overall	5,321	900	39,345	11,696	45,629	2,868	194	2,030	107,982	111,540

Figure A1. Trends in the number of kilograms of active substances sold over the 2011-2022 period, by pharmacotherapeutic group

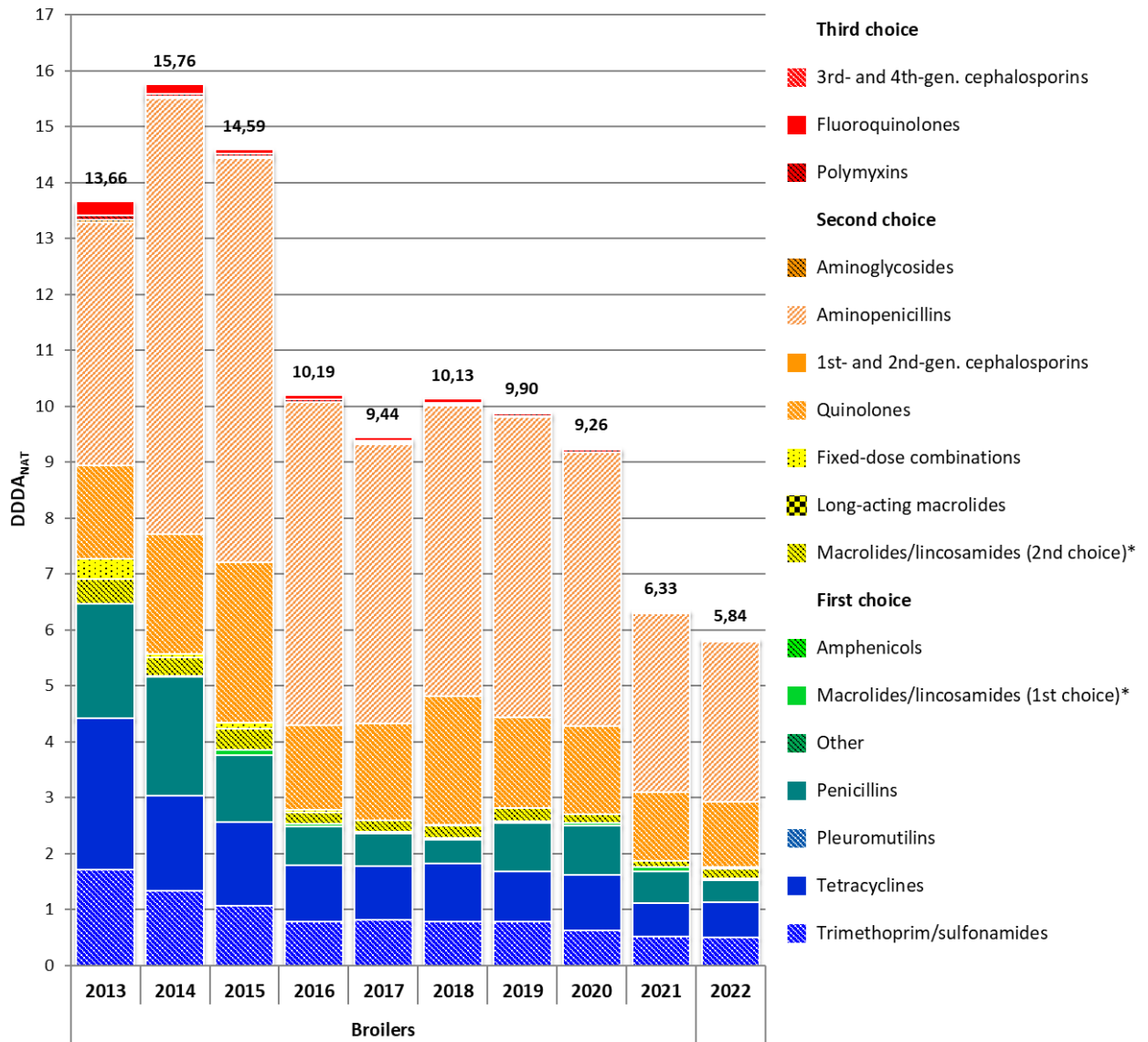


Detailed antibiotic usage data by livestock sector

Broiler farming sector

1. Antibiotic use in DDDA_{NAT}

Figure A2. DDDA_{NAT} trends in the broiler farming sector over the 2013-2022 period, by pharmacotherapeutic group



* In the poultry farming sector, all macrolides/lincosamides except for lincomycin and spiramycin are categorized as second-choice antibiotics. In other livestock sectors, only long-acting macrolides are categorized as second-choice antibiotics.

2. Antibiotic use in DDDA_F

2.1 All broiler farms combined

Number of farms: 788*

Number of farms with DDDA_F=0: (53.9%)

Number of farms that used third- and fourth-generation cephalosporins**: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 6 (0.8%)

Number of broiler farms that used polymyxins: 5 (0.6%)

Table A4. Antibiotic use in DDDA_F at broiler farms from 2016-2022***

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

* 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 A3. 2016 and 2022 DDDA_F distributions for broiler farms

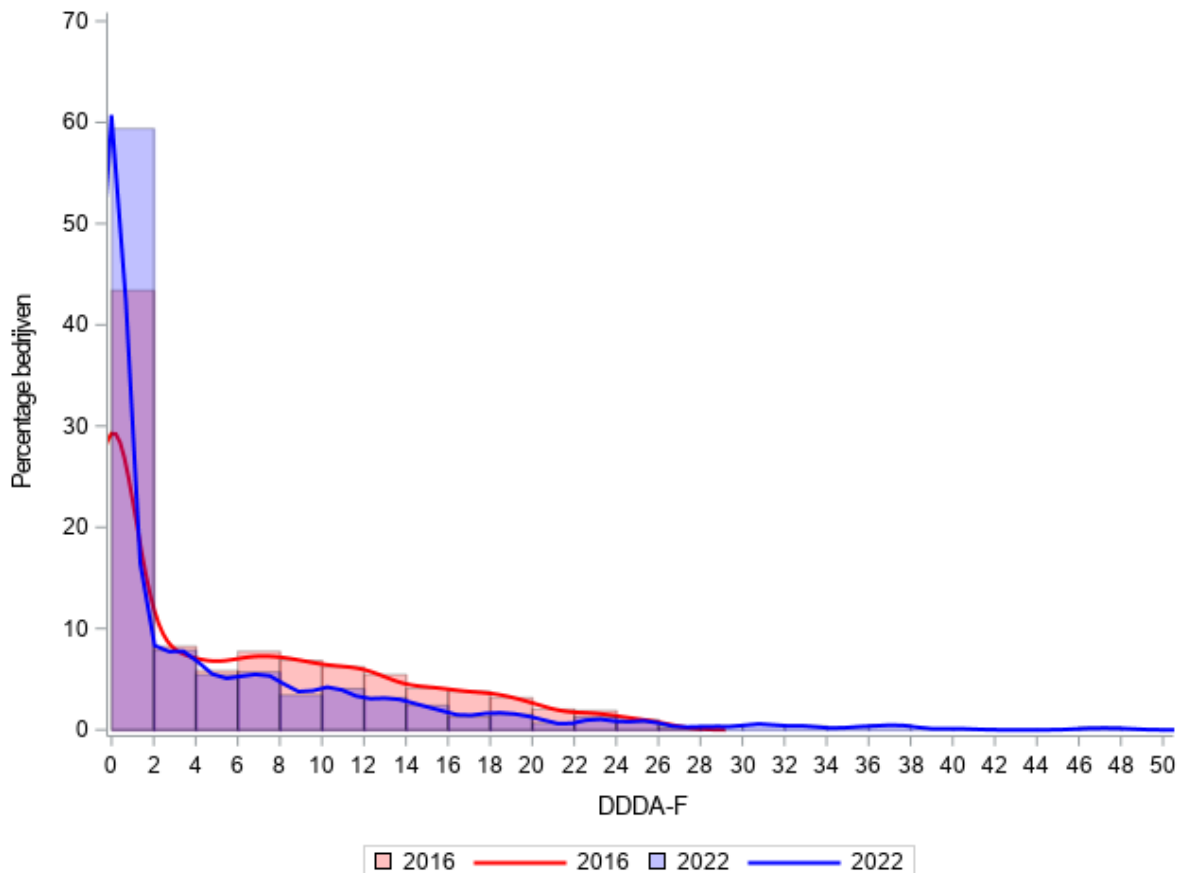


Table A5. Antibiotic use in DDDA_F at broiler farms in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Macrolides/lincosamides	Oral	98.1%	0.00	0.00	0.12
1	Penicillins	Oral	93.1%	0.00	0.00	0.29
1	Tetracyclines	Oral	86.8%	0.00	0.00	0.43
1	Trimethoprim/sulfonamides	Oral	66.9%	0.00	2.40	1.87
2	Aminoglycosides	Oral	99.6%	0.00	0.00	0.00
2	Aminopenicillins	Oral	75.6%	0.00	0.00	1.38
2	Quinolones	Oral	87.6%	0.00	0.00	0.51
2	Fixed-dose combinations	Oral	98.6%	0.00	0.00	0.09
2	Macrolides/lincosamides	Oral	94.2%	0.00	0.00	0.06
3	Fluoroquinolones	Oral	99.2%	0.00	0.00	0.02
3	Polymyxins	Oral	99.4%	0.00	0.00	0.01

2.2 Broiler farms with conventional breeds

Number of farms: 357

Number of farms with $DDDA_F=0$: 93 (26.1%)

Number of farms that used third- and fourth-generation cephalosporins*: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 6 (1.7%)

Number of broiler farms that used polymyxins: 5 (1.4%)

Table A6. Antibiotic use in $DDDA_F$ at broiler farms with conventional breeds from 2016 to 2022**

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

* These antibiotics are not authorized for use in poultry.

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

Figure A4. 2016 and 2022 $DDDA_F$ distributions for broiler farms with conventional breeds

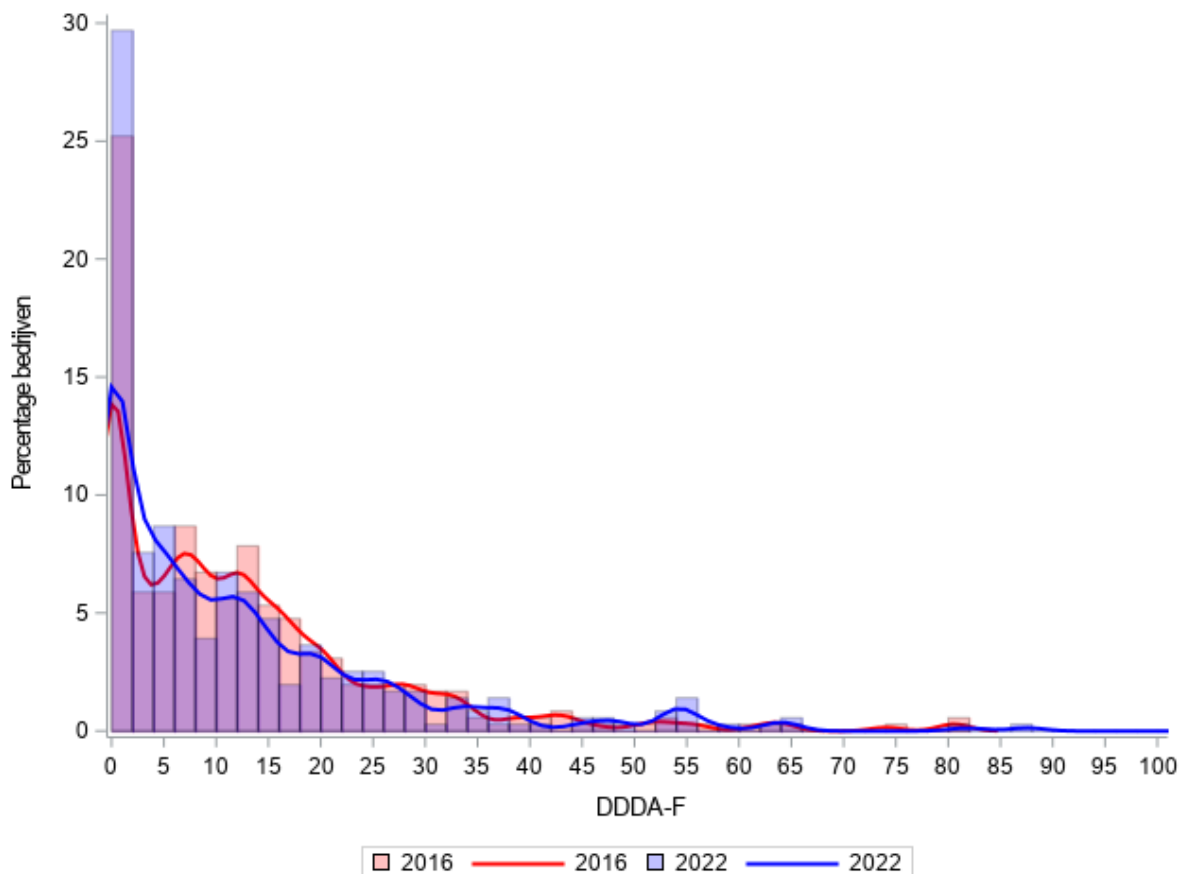


Figure A5. Scatter plot of 2021 and 2022 DDDA_F values for broiler farms with conventional breeds. The red solid lines represent the action threshold defined by the SDa. The red dotted lines represent the transitional action threshold negotiated by the livestock sector. For each type of action threshold, the number of farms with persistently high usage levels is listed in the upper-right corner of the scatter plot

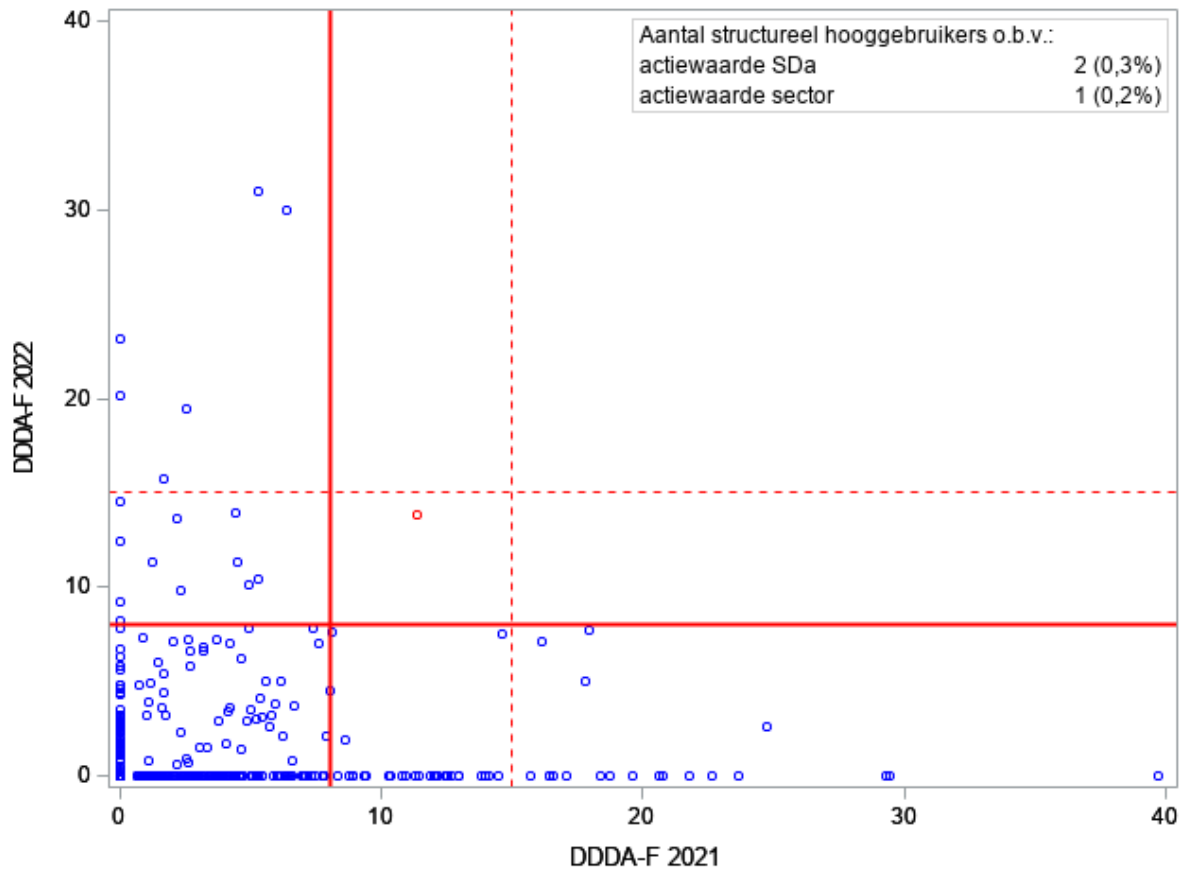


Table A7. Antibiotic use in DDDA_F at broiler farms with conventional breeds in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDD _A _F		
				Median	P75	Mean
1	Macrolides/lincosamides	Oral	96.1%	0.00	0.00	0.28
1	Penicillins	Oral	89.6%	0.00	0.00	0.44
1	Tetracyclines	Oral	75.6%	0.00	0.00	1.30
1	Trimethoprim/sulfonamides	Oral	44.8%	1.32	5.40	4.61
2	Aminoglycosides	Oral	99.4%	0.00	0.00	0.01
2	Aminopenicillins	Oral	51.5%	0.00	4.99	3.82
2	Quinolones	Oral	75.1%	0.00	0.00	1.39
2	Fixed-dose combinations	Oral	96.9%	0.00	0.00	0.35
2	Macrolides/lincosamides	Oral	90.2%	0.00	0.00	0.12
3	Fluoroquinolones	Oral	98.3%	0.00	0.00	0.04
3	Polymyxins	Oral	98.6%	0.00	0.00	0.06

2.3 Broiler farms with slower growing breeds

Number of farms: 599

Number of farms with $DDDA_F=0$: 477 (79.6%)

Number of farms that used third- and fourth-generation cephalosporins*: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 0 (0.0%)

Number of broiler farms that used polymyxins: 0 (0.0%)

Table A8. Antibiotic use in $DDDA_F$ at broiler farms with slower growing breeds from 2016 to 2022**

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

* These antibiotics are not authorized for use in poultry.

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

Figure A6. 2016 and 2022 $DDDA_F$ distributions for broiler farms with slower growing breeds

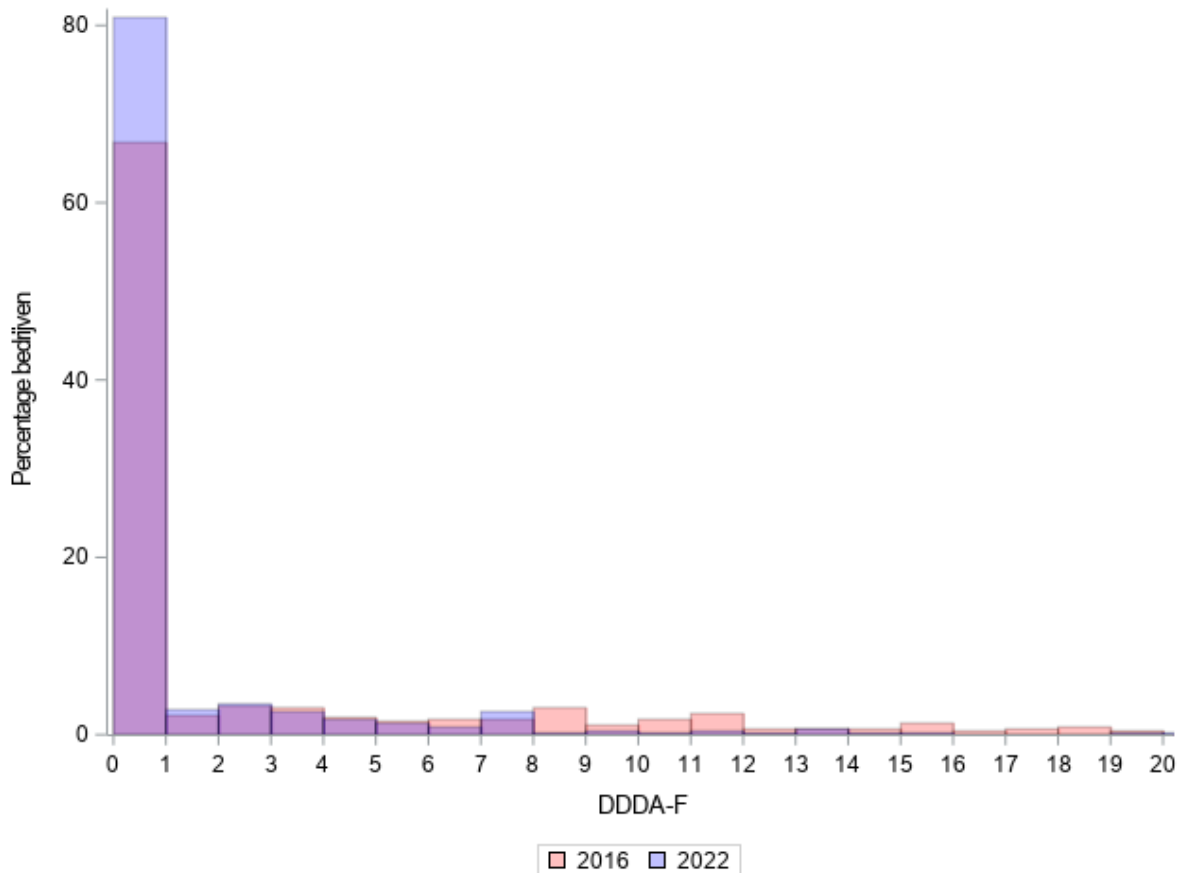


Figure A7. Scatter plot of 2021 and 2022 DDDA_F values for broiler farms with slower growing breeds. The red solid lines represent the action threshold defined by the SDa. The red dotted lines represent the transitional action threshold negotiated by the livestock sector. For each type of action threshold, the number of farms with persistently high usage levels is listed in the upper-right corner of the scatter plot

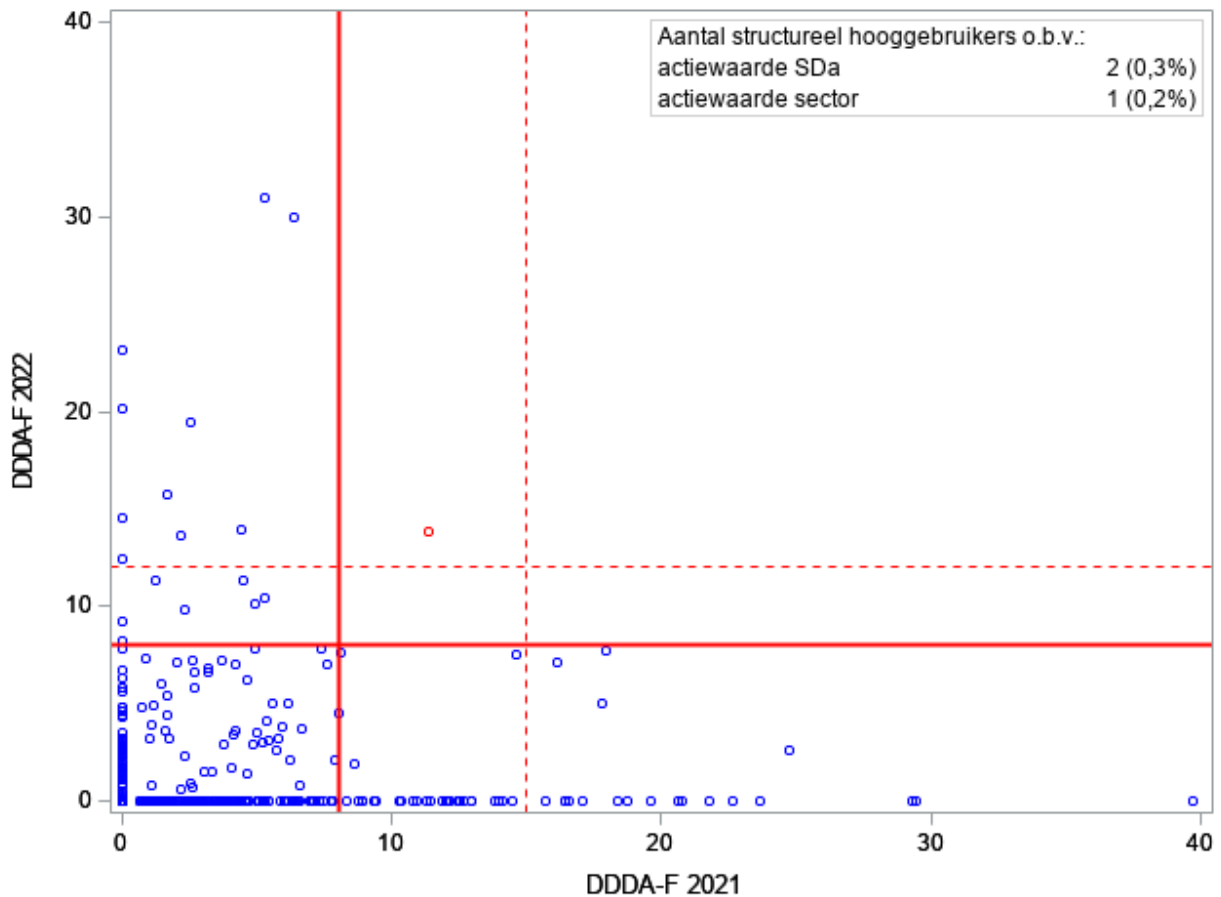


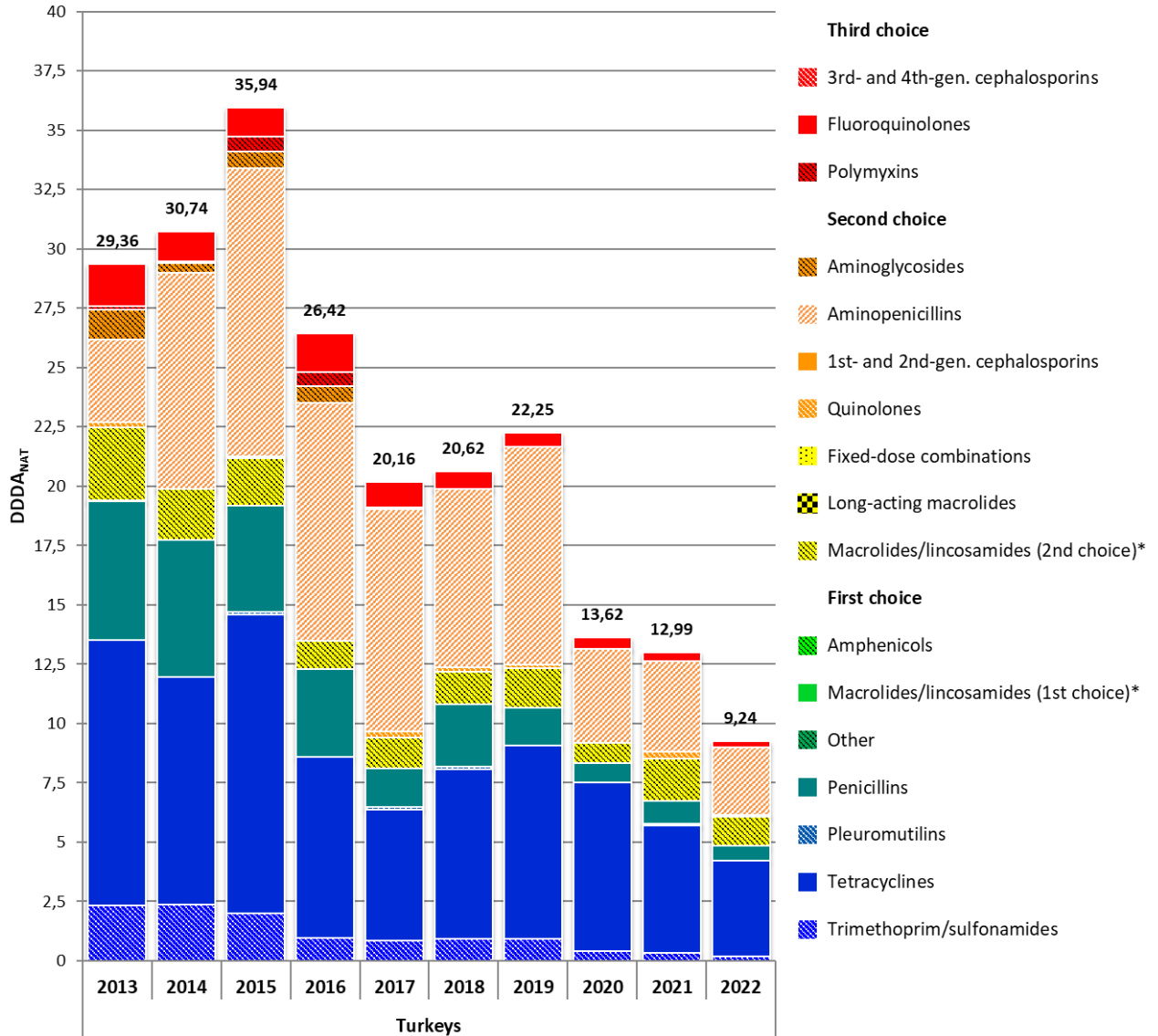
Table A9. Antibiotic use in DDDA_F at broiler farms with slower growing breeds in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDD _F		
				Median	P75	Mean
1	Penicillins	Oral	97.0%	0.00	0.00	0.15
1	Tetracyclines	Oral	96.8%	0.00	0.00	0.30
1	Trimethoprim/sulfonamides	Oral	87.6%	0.00	0.00	0.54
2	Aminoglycosides	Oral	99.8%	0.00	0.00	0.01
2	Aminopenicillins	Oral	95.8%	0.00	0.00	0.24
2	Quinolones	Oral	98.2%	0.00	0.00	0.11
2	Macrolides/lincosamides	Oral	97.8%	0.00	0.00	0.02

Turkey farming sector

1. Antibiotic use in DDDA_{NAT}

Figure A8. DDDA_{NAT} trends in the turkey farming sector over the 2013-2022 period, by pharmacotherapeutic group



* In the poultry farming sector, all macrolides/lincosamides except for lincomycin and spiramycin are categorized as second-choice antibiotics. In other livestock sectors, only long-acting macrolides are categorized as second-choice antibiotics.

2. Antibiotic use in DDDA_F

Number of farms: 38

Number of farms with DDDA_F=0: 12 (31.6%)

Number of farms that used third- and fourth-generation cephalosporins*: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 9 (23.7%)

Number of broiler farms that used polymyxins: 0 (0.0%)

Table A10. Antibiotic use in DDDA_F at turkey farms from 2016 to 2022**

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

* These antibiotics are not authorized for use in poultry.

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

Figure A9. 2016 and 2022 DDDA_F distributions for turkey farms

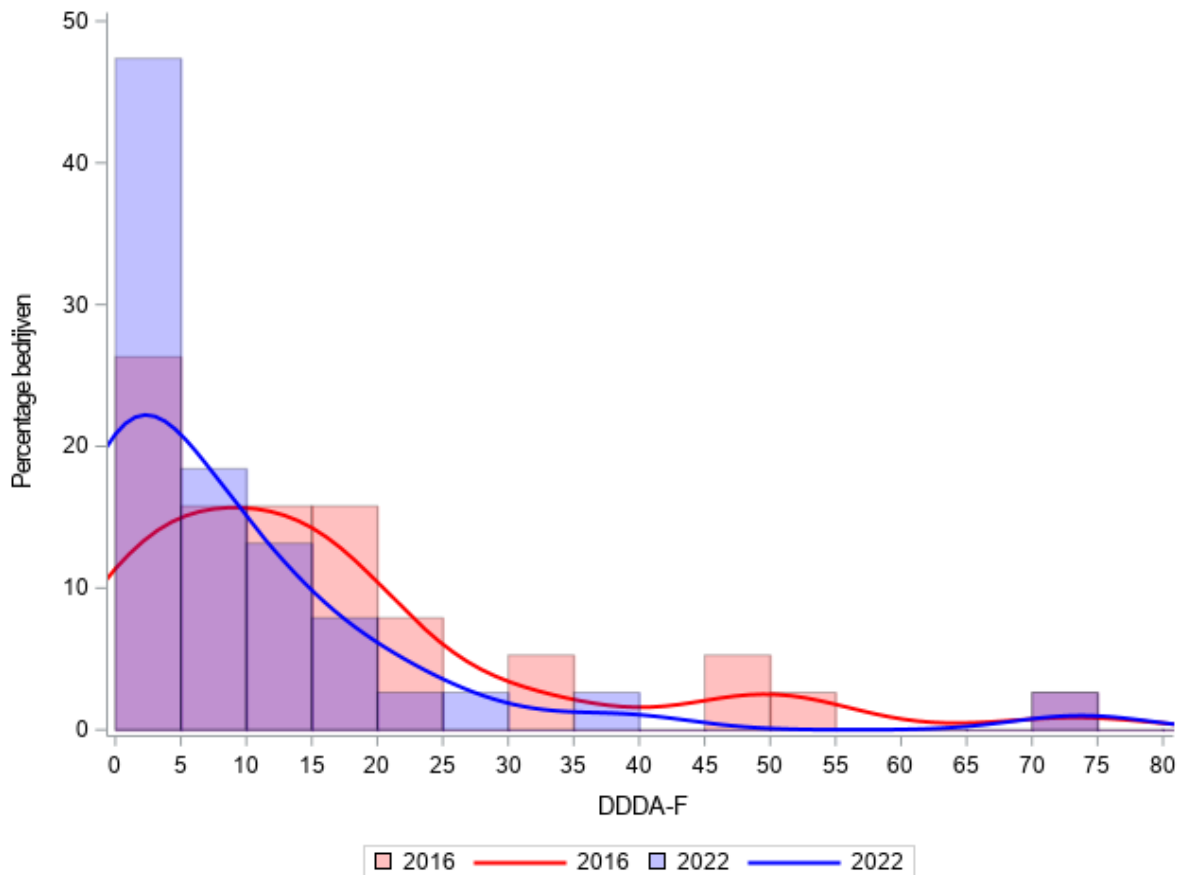


Figure A10. Scatter plot of 2021 and 2022 DDDA_F values for turkey farms. The red solid lines represent the action thresholds defined by the SDa. The red dotted lines represent the transitional action threshold negotiated by the livestock sector. For each type of action threshold, the number of farms with persistently high usage levels is listed in the upper-right corner of the scatter plot

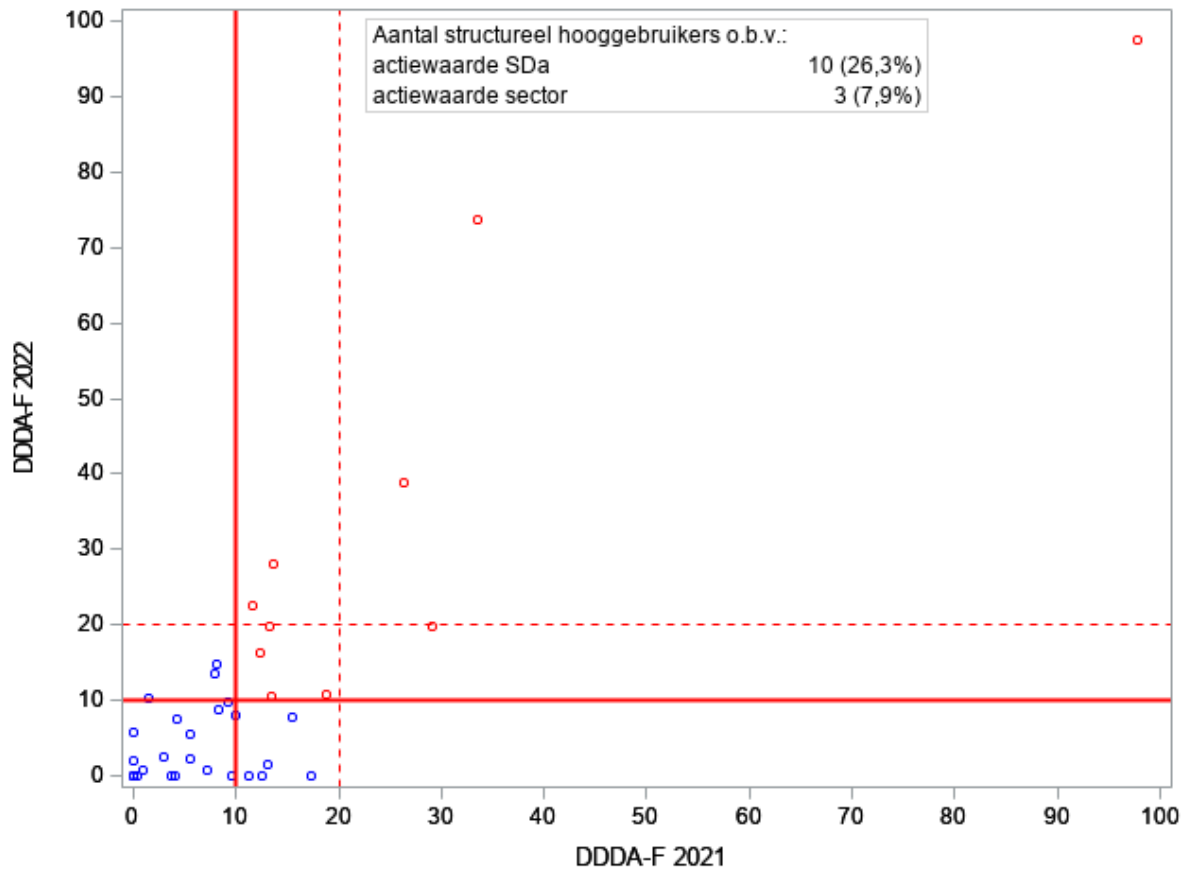


Table A11. Antibiotic use in DDDA_F at turkey farms in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDD _A _F		
				Median	P75	Mean
1	Penicillins	Oral	78.9%	0.00	0.00	1.17
1	Tetracyclines	Oral	55.3%	0.00	3.76	2.45
1	Trimethoprim/sulfonamides	Oral	86.8%	0.00	0.00	0.49
2	Aminopenicillins	Oral	63.2%	0.00	2.25	5.20
2	Quinolones	Oral	94.7%	0.00	0.00	0.13
2	Macrolides/lincosamides	Oral	57.9%	0.00	1.55	1.32
3	Fluoroquinolones	Oral	76.3%	0.00	0.00	0.81

Layer farming sector

1. Antibiotic use in DDDA_F

1.1 Layer farms

Number of farms: 816

Number of farms with DDDA_F=0: 701 (85.9%)

Number of farms that used third- and fourth-generation cephalosporins*: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 0 (0.0%)

Number of broiler farms that used polymyxins: 52 (6.4%)

Table A12. Antibiotic use in DDDA_F at layer farms from 2017 to 2022**

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

* These antibiotics are not authorized for use in poultry.

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

Figure A11. 2017 and 2022 DDDA_F distributions for layer farms (no probability density functions can be shown due to too little variation)

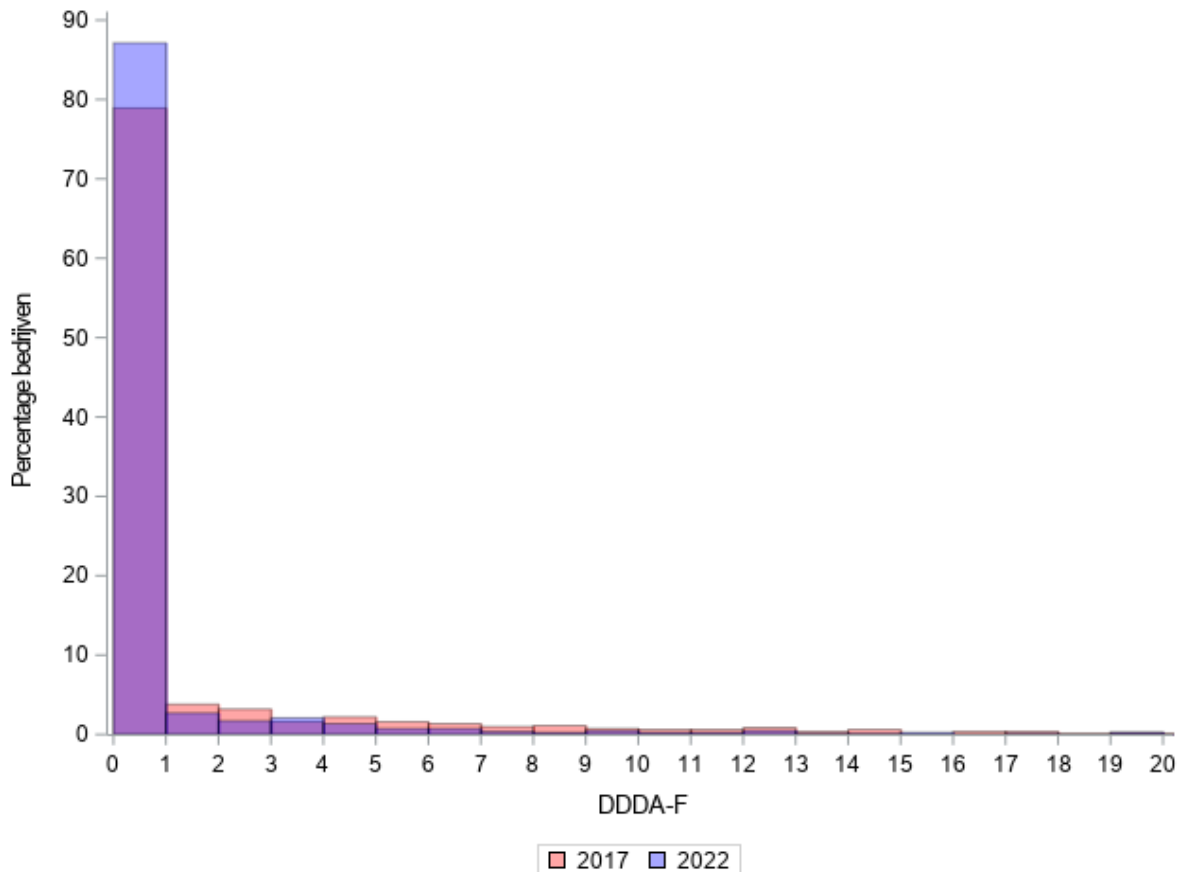


Table A13. Antibiotic use in DDDA_F at layer farms in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Penicillins	Oral	97.4%	0.00	0.00	0.33
1	Pleuromutilines	Oral	99.3%	0.00	0.00	0.05
1	Tetracyclines	Oral	99.9%	0.00	0.00	0.00
2	Aminoglycosides	Oral	98.2%	0.00	0.00	0.14
2	Macrolides/lincosamides	Oral	94.2%	0.00	0.00	0.10
3	Polymyxins	Oral	93.6%	0.00	0.00	0.34

Layer pullet and layer parent/grandparent stock farming sectors

1. Antibiotic use in DDDA_F

1.1 Pullet rearing farms

Number of farms: 169

Number of farms with DDDA_F=0: 106 (62.7%)

Number of farms that used third- and fourth-generation cephalosporins*: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 0 (0.0%)

Number of broiler farms that used polymyxins: 0 (0.0%)

Table A14. Antibiotic use in DDDA_F at pullet rearing farms from 2017 to 2022**

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

* 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. 2017 and 2022 DDDA_F distributions for pullet rearing farms (no probability density functions can be shown due to too little variation)

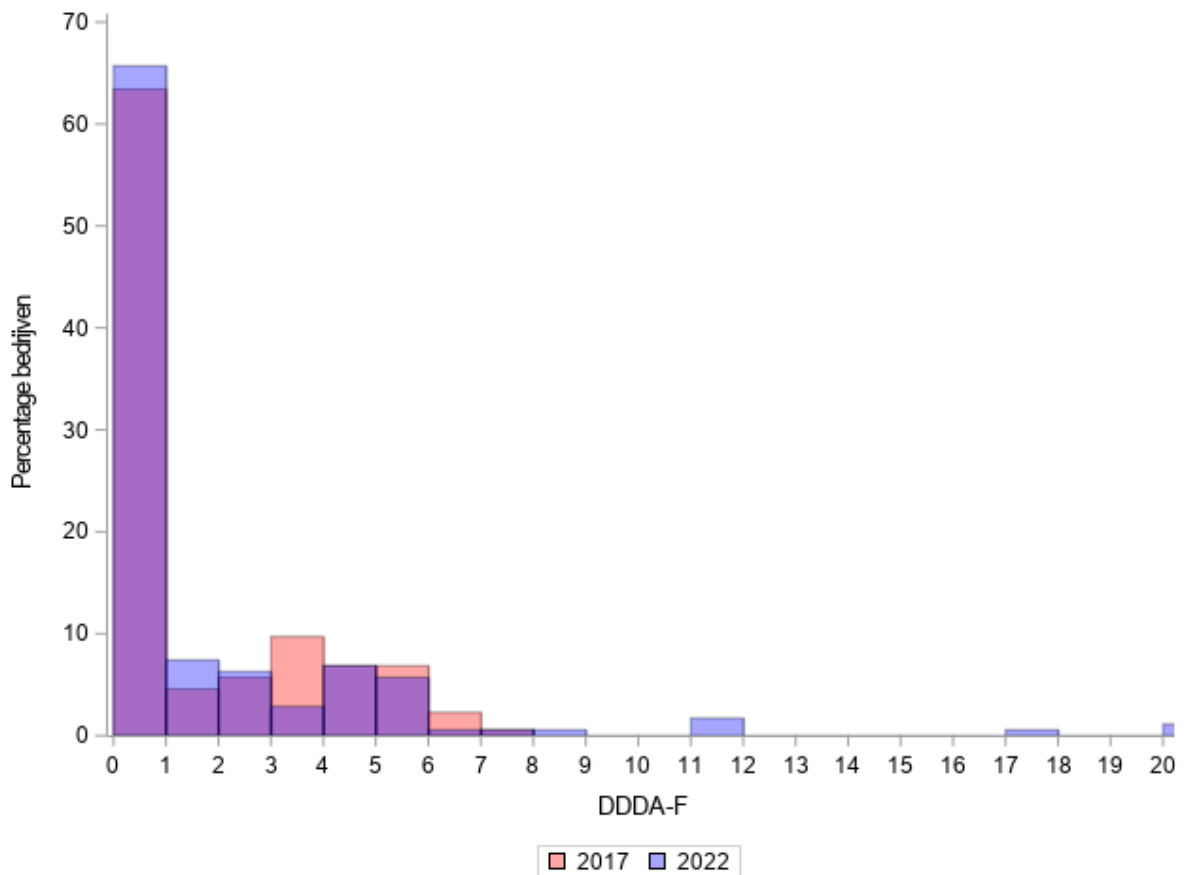


Table A15. Antibiotic use in $DDDA_F$ at pullet rearing farms in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with $DDDA_F=0$	$DDDA_F$		
				Median	P75	Mean
1	Penicillins	Oral	79.3%	0.00	0.00	0.87
1	Tetracyclines	Oral	89.9%	0.00	0.00	0.64
1	Trimethoprim/sulfonamides	Oral	99.4%	0.00	0.00	0.01
2	Aminopenicillins	Oral	98.2%	0.00	0.00	0.05
2	Macrolides/lincosamides	Oral	87.6%	0.00	0.00	0.27

1.2 Parent/grandparent stock rearing farms

Number of farms: 24

Number of farms with $DDDA_F=0$: 15 (62.5%)

Number of farms that used third- and fourth-generation cephalosporins*: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 0 (0.0%)

Number of broiler farms that used polymyxins: 0 (0.0%)

Table A16. Antibiotic use in $DDDA_F$ at parent/grandparent stock rearing farms from 2017 to 2022**

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

* These antibiotics are not authorized for use in poultry.

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

Figure A13. 2017 and 2022 $DDDA_F$ distributions for parent/grandparent stock rearing farms (no probability density functions can be shown due to too little variation)

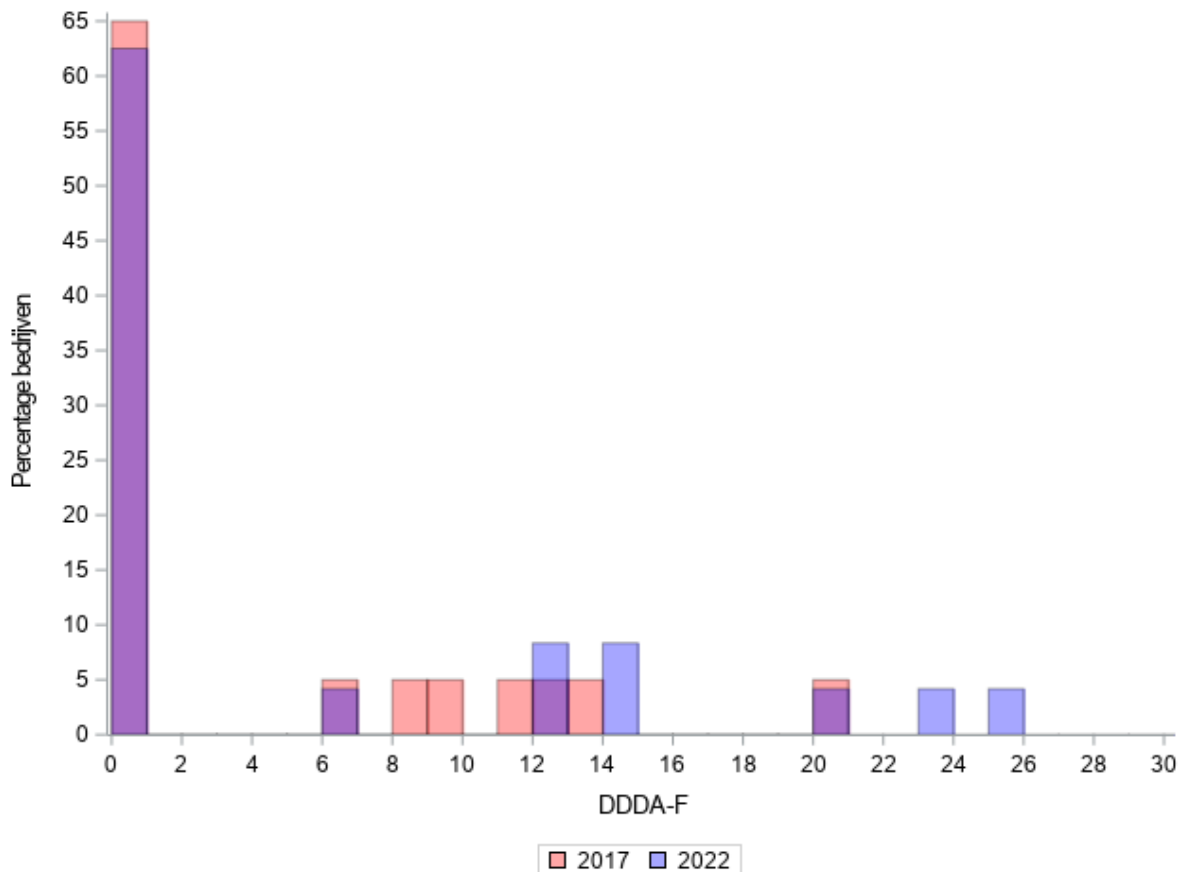


Table A17. Antibiotic use in DDDA_F at parent/grandparent stock rearing farms in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Penicillins	Oral	91.7%	0.00	0.00	0.79
1	Tetracyclines	Oral	91.7%	0.00	0.00	1.08
1	Trimethoprim/sulfonamides	Oral	95.8%	0.00	0.00	0.09
2	Aminopenicillins	Oral	83.3%	0.00	0.00	1.97
2	Quinolones	Oral	83.3%	0.00	0.00	2.44
2	Macrolides/lincosamides	Oral	83.3%	0.00	0.00	1.27
3	Fluoroquinolones	Oral	95.8%	0.00	0.00	0.52

1.3 Parent/grandparent stock production farms

Number of farms: 54

Number of farms with $DDDA_F=0$: 39 (72.5%)

Number of farms that used third- and fourth-generation cephalosporins*: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 0 (0.0%)

Number of broiler farms that used polymyxins: 2 (3.7%)

Table A18. Antibiotic use in $DDDA_F$ at parent/grandparent stock production farms from 2017 to 2022**

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

* These antibiotics are not authorized for use in poultry.

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

Figure A14. 2017 and 2022 $DDDA_F$ distributions for parent/grandparent stock production farms (no probability density functions can be shown due to too little variation)

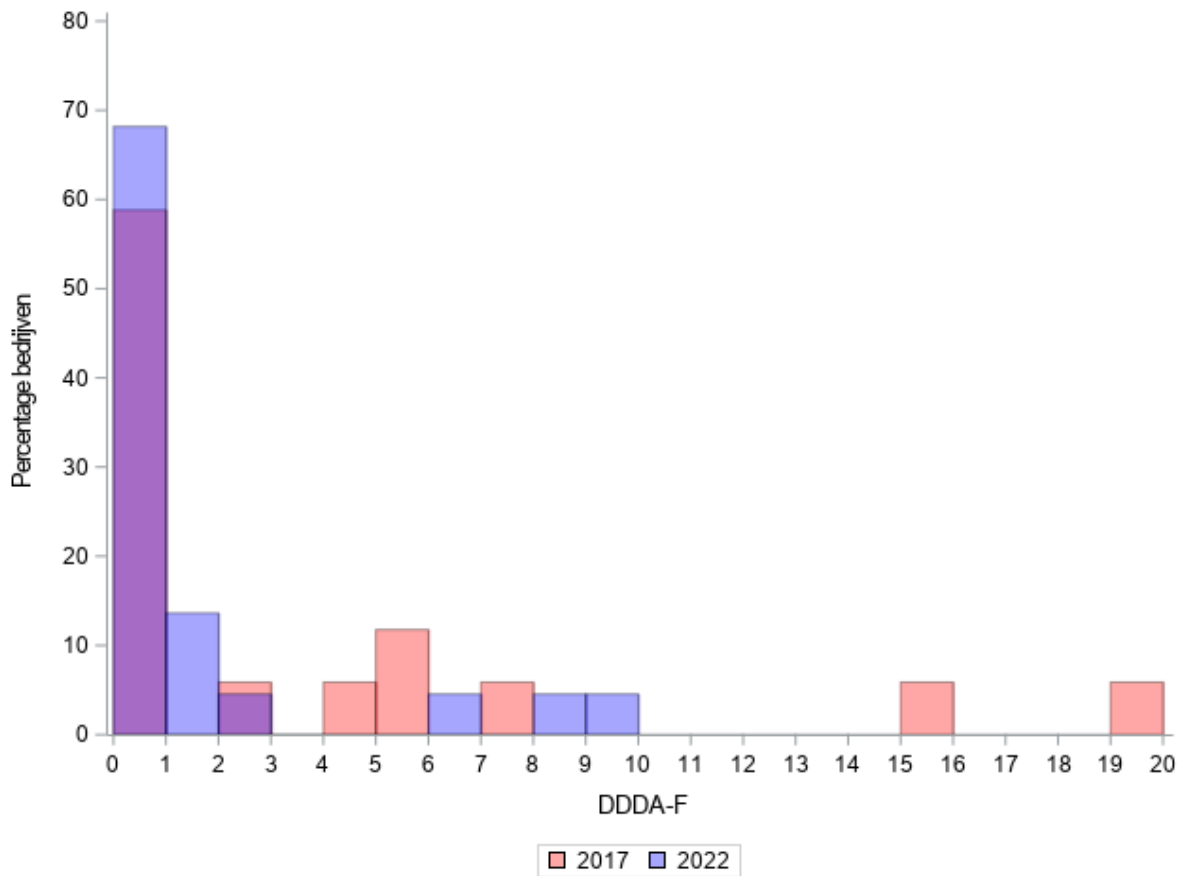


Table A19. Antibiotic use in DDDA_F at parent/grandparent stock production farms in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Penicillins	Oral	94.4%	0.00	0.00	0.19
1	Tetracyclines	Oral	94.4%	0.00	0.00	0.30
1	Trimethoprim/sulfonamides	Oral	96.3%	0.00	0.00	0.16
2	Quinolones	Oral	94.4%	0.00	0.00	0.21
2	Macrolides/lincosamides	Oral	87.0%	0.00	0.00	0.35
3	Polymyxins	Oral	96.3%	0.00	0.00	0.42

Broiler parent/grandparent stock farming sector

1. Antibiotic use in DDDA_F

1.1 Parent/grandparent stock rearing farms

Number of farms: 90

Number of farms with DDDA_F=0: 14 (15.6%)

Number of farms that used third- and fourth-generation cephalosporins*: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 1 (1.1%)

Number of broiler farms that used polymyxins: 0 (0.0%)

Table A20. Antibiotic use in DDDA_F at parent/grandparent stock rearing farms from 2017 to 2022**

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

* These antibiotics are not authorized for use in poultry.

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

Figure A15. 2017 and 2022 DDDA_F distributions for parent/grandparent stock rearing farms

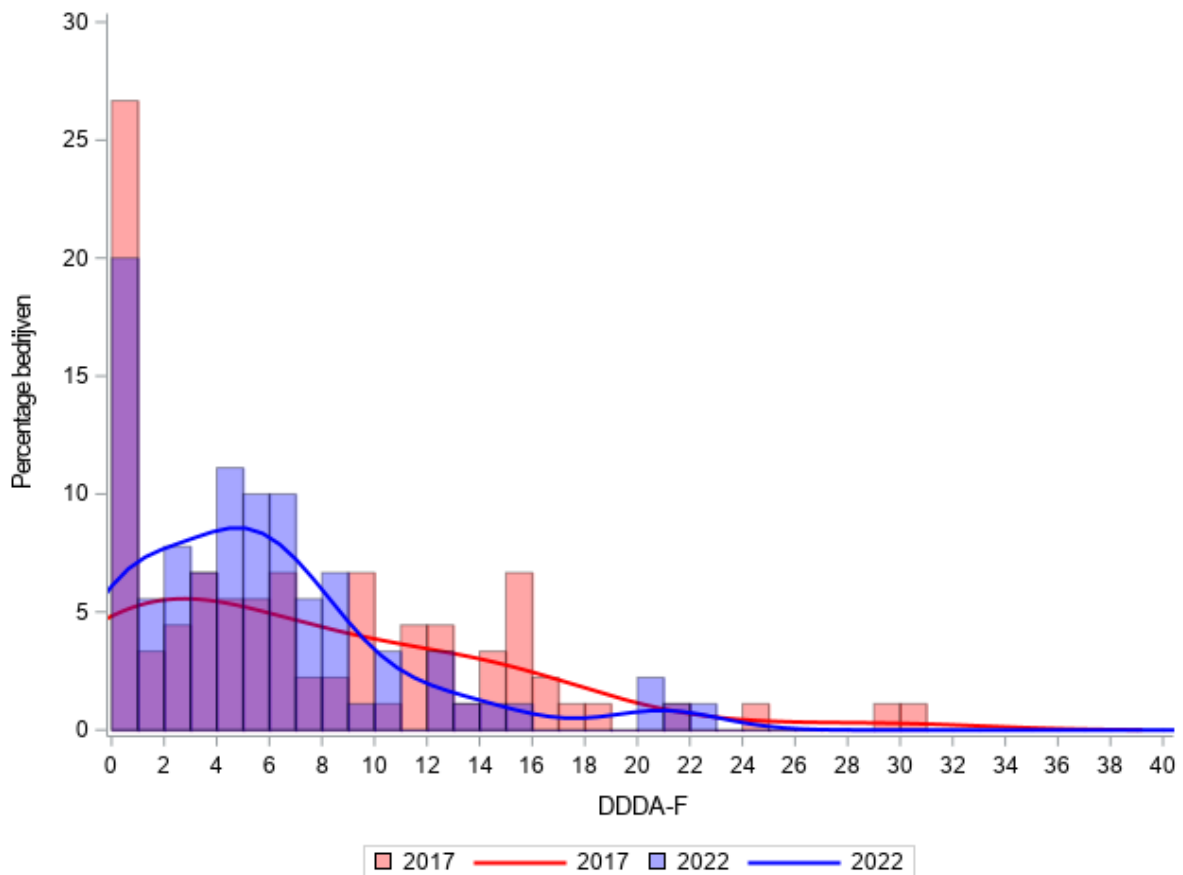


Table A21. Antibiotic use in DDDA_F at parent/grandparent stock rearing farms in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Penicillins	Oral	66.7%	0.00	1.33	1.14
1	Tetracyclines	Oral	85.6%	0.00	0.00	0.80
1	Trimethoprim/sulfonamides	Oral	37.8%	1.21	3.47	2.18
2	Aminopenicillins	Oral	64.4%	0.00	1.42	1.72
2	Quinolones	Oral	85.6%	0.00	0.00	0.54
2	Macrolides/lincosamides	Oral	98.9%	0.00	0.00	0.00
3	Fluoroquinolones	Oral	98.9%	0.00	0.00	0.03

1.2 Parent/grandparent stock production farms

Number of farms: 200

Number of farms with DDDA_F=0: 148 (74.0%)

Number of farms that used third- and fourth-generation cephalosporins*: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 3 (1.5%)

Number of broiler farms that used polymyxins: 1 (0.5%)

Table A22. Antibiotic use in DDDA_F at parent/grandparent stock production farms from 2017 to 2022**

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

* These antibiotics are not authorized for use in poultry.

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

Figure A16. 2017 and 2022 DDDA_F distributions for parent/grandparent stock production farms (no probability density functions can be shown due to too little variation)

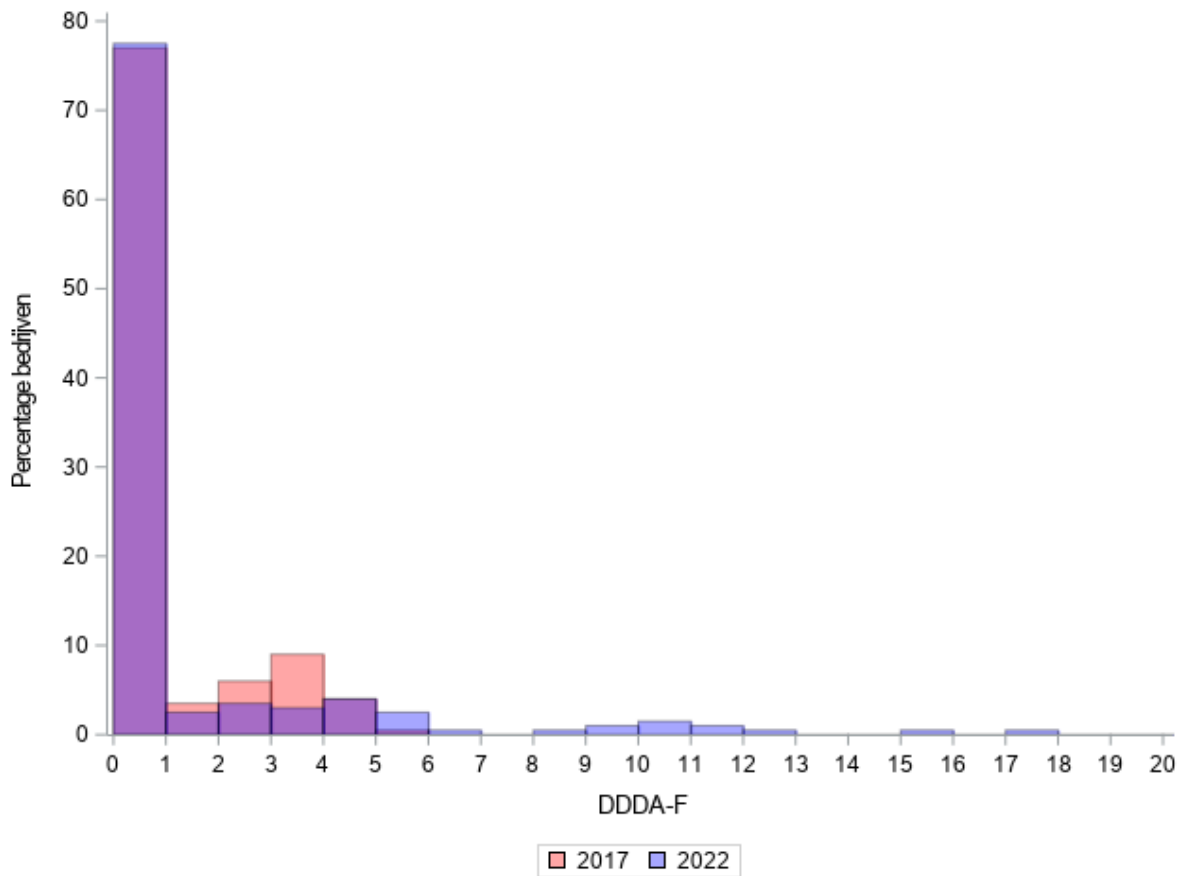


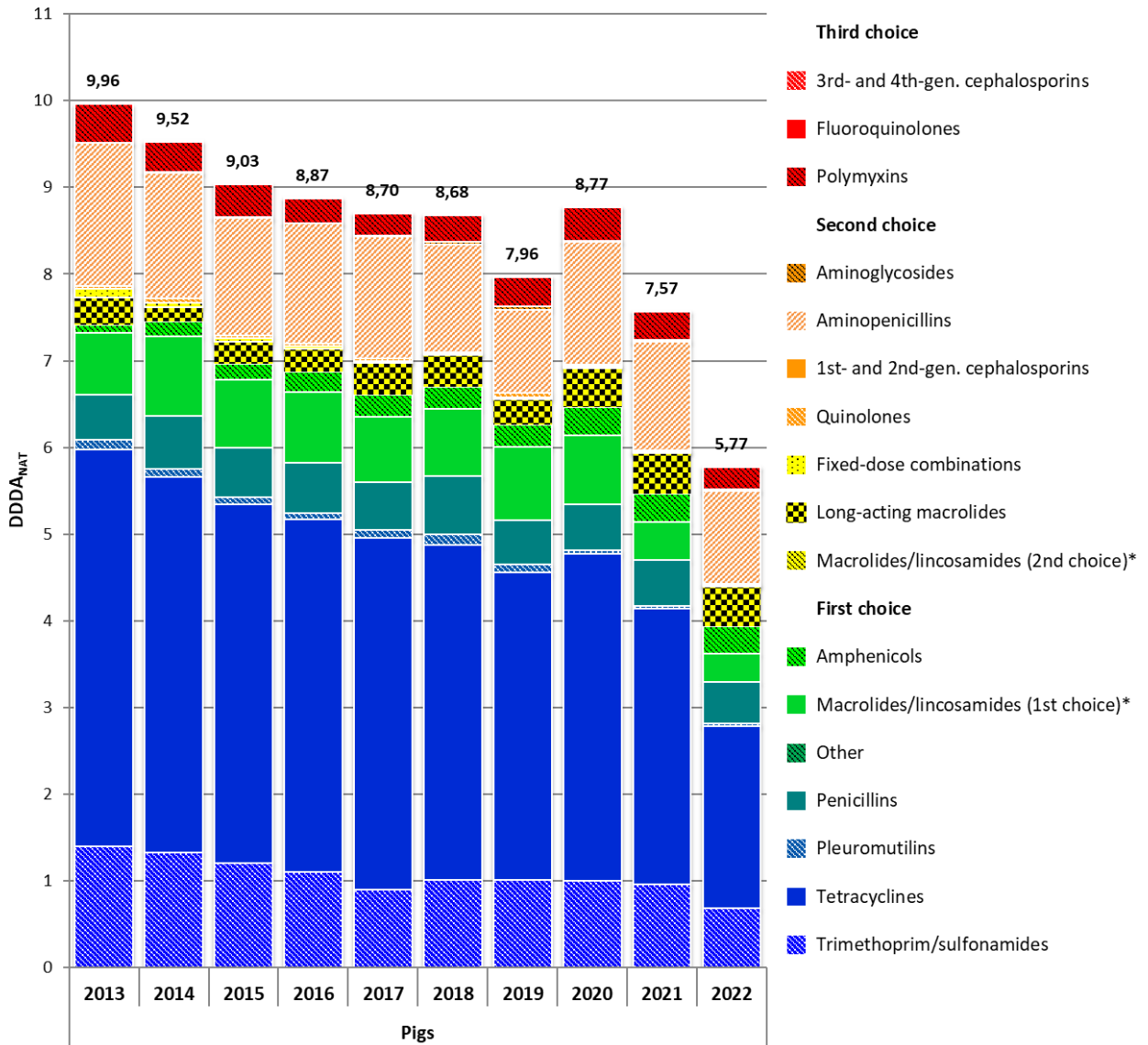
Table A23. Antibiotic use in DDDA_F at parent/grandparent stock production farms in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Penicillins	Oral	91.5%	0.00	0.00	0.44
1	Tetracyclines	Oral	87.0%	0.00	0.00	0.77
1	Trimethoprim/sulfonamides	Oral	97.0%	0.00	0.00	0.06
2	Aminopenicillins	Oral	99.0%	0.00	0.00	0.02
2	Quinolones	Oral	97.5%	0.00	0.00	0.09
2	Macrolides/lincosamides	Oral	98.0%	0.00	0.00	0.02
3	Fluoroquinolones	Oral	98.5%	0.00	0.00	0.05
3	Polymyxins	Oral	99.5%	0.00	0.00	0.01

Pig farming sector

1. Antibiotic use in DDDA_{NAT}

Figure A17. DDDA_{NAT} trends in the pig farming sector over the 2013-2022 period, by pharmacotherapeutic group



* In the poultry farming sector, all macrolides/lincosamides except for lincomycin and spiramycin are categorized as second-choice antibiotics. In other livestock sectors, only long-acting macrolides are categorized as second-choice antibiotics.

2. Antibiotic use in DDDA_F

2.1 Farms with sows and suckling piglets

Number of farms: 1.318

Number of farms with DDDA_F=0: 65 (4.9%)

Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 0 (0.0%)

Number of broiler farms that used polymyxins: 411 (31.2%)

Table A24. Antibiotic use in DDDA_F at farms with sows and suckling piglets from 2015 to 2022*

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

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

Figure A18. 2015 and 2022 DDDA_F distributions for farms with sows and suckling piglets

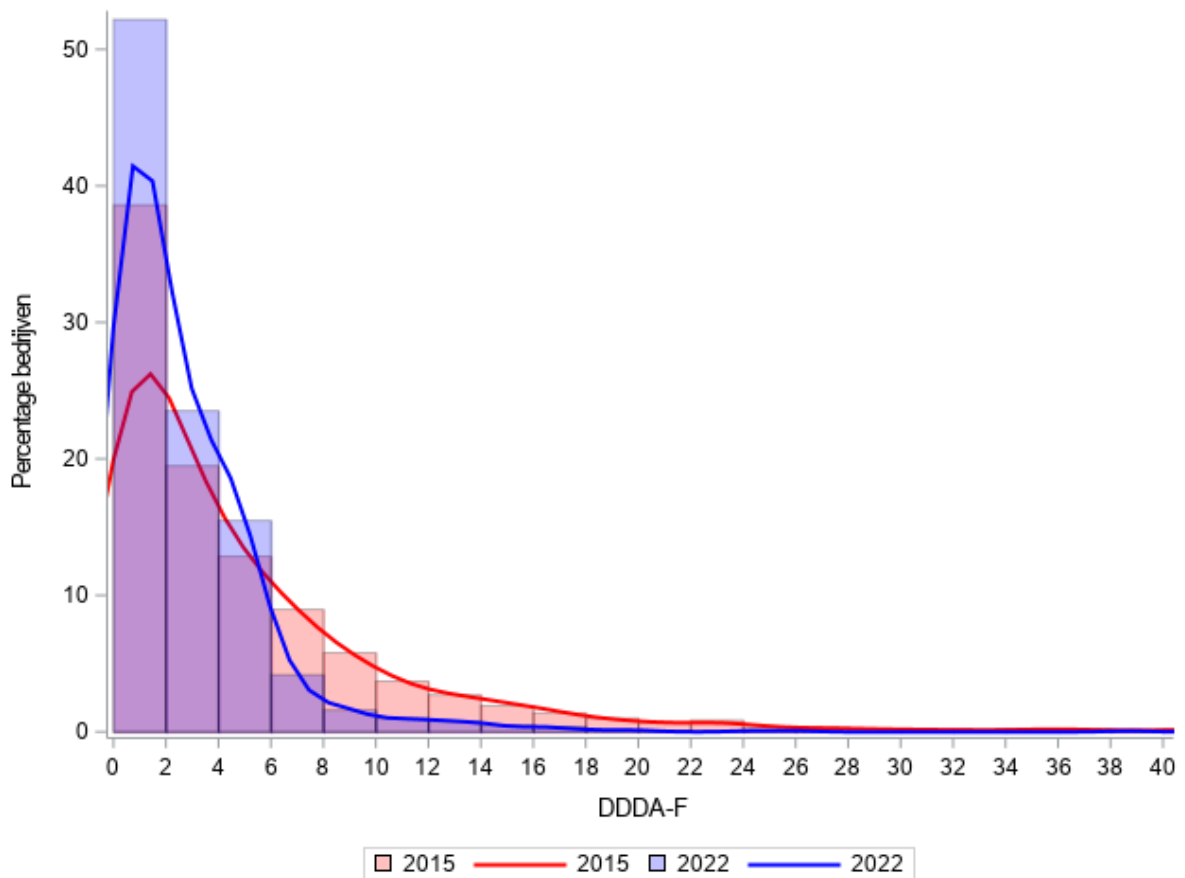


Figure A19. Scatter plot of 2021 and 2022 DDDA_F values for farms with sows and suckling piglets. The red solid lines represent the action threshold defined by the SDa. The number of farms with persistently high usage levels is listed in the upper-right corner of the scatter plot

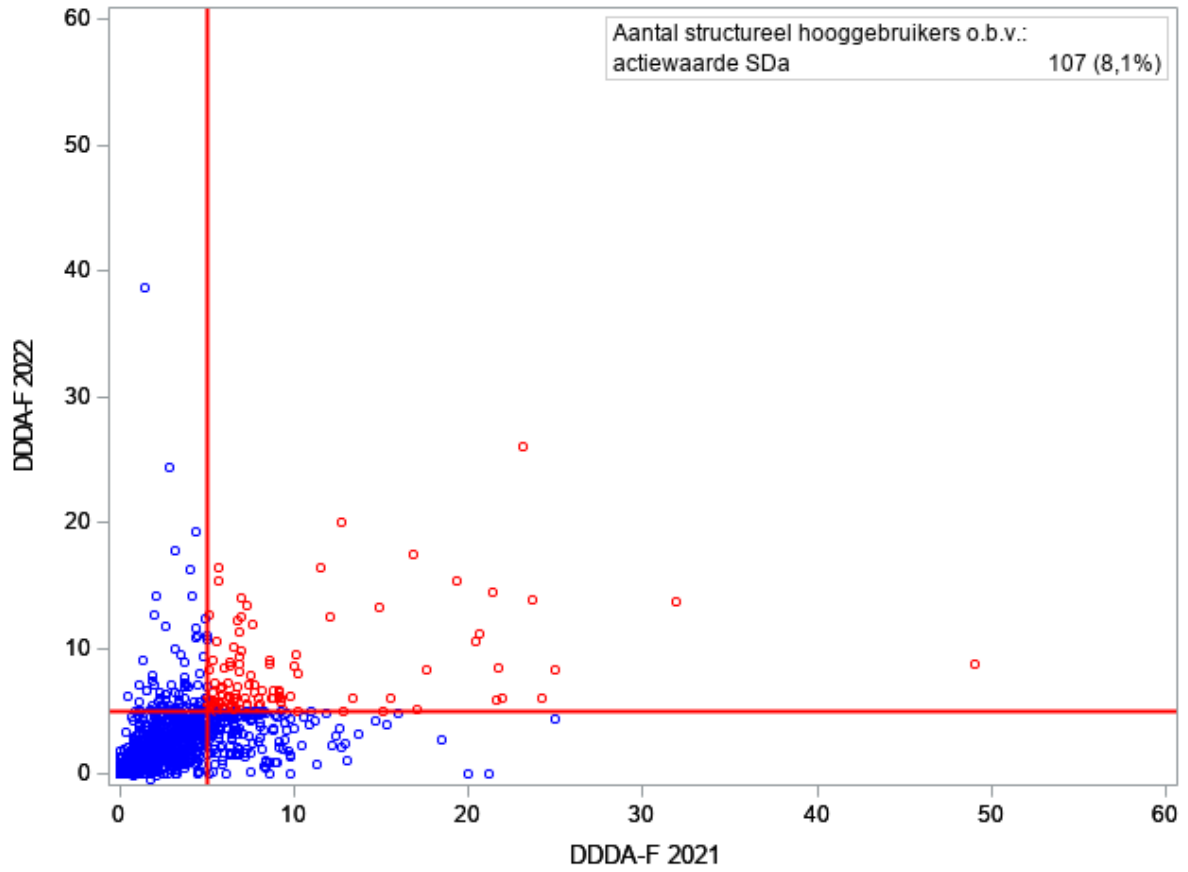


Table A25. Antibiotic use in DDDA_F at farms with sows and suckling piglets in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Amphenicols	Parenteral	69.3%	0.00	0.08	0.18
1	Macrolides/lincosamides	Oral	96.4%	0.00	0.00	0.04
1	Macrolides/lincosamides	Parenteral	89.4%	0.00	0.00	0.02
1	Penicillins	Oral	99.9%	0.00	0.00	0.00
1	Penicillins	Parenteral	17.3%	0.37	0.99	0.71
1	Pleuromutilins	Oral	99.5%	0.00	0.00	0.01
1	Pleuromutilins	Parenteral	96.7%	0.00	0.00	0.00
1	Tetracyclines	Oral	87.4%	0.00	0.00	0.27
1	Tetracyclines	Parenteral	43.9%	0.04	0.34	0.31
1	Trimethoprim/sulfonamides	Oral	87.8%	0.00	0.00	0.14
1	Trimethoprim/sulfonamides	Parenteral	36.4%	0.06	0.28	0.22
2	Aminoglycosides	Oral	95.4%	0.00	0.00	0.01
2	Aminopenicillins	Oral	93.6%	0.00	0.00	0.09
2	Aminopenicillins	Parenteral	46.8%	0.02	0.39	0.26
2	Quinolones	Oral	99.9%	0.00	0.00	0.01
2	Fixed-dose combinations	Parenteral	86.3%	0.00	0.00	0.03
2	Long-acting macrolides	Parenteral	74.6%	0.00	0.09	0.45
3	Polymyxins	Oral	95.2%	0.00	0.00	0.02
3	Polymyxins	Parenteral	70.3%	0.00	0.02	0.05

2.2 Farms with weaner pigs

Number of farms: 1.463

Number of farms with DDDA_F=0: 231 (15.8%)

Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 0 (0.0%)

Number of broiler farms that used polymyxins: 403 (27.5%)

Table A26. Antibiotic use in DDDA_F at farms with weaner pigs from 2015 to 2022*

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

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

Figure A20. 2015 and 2022 DDDA_F distributions for farms with weaner pigs

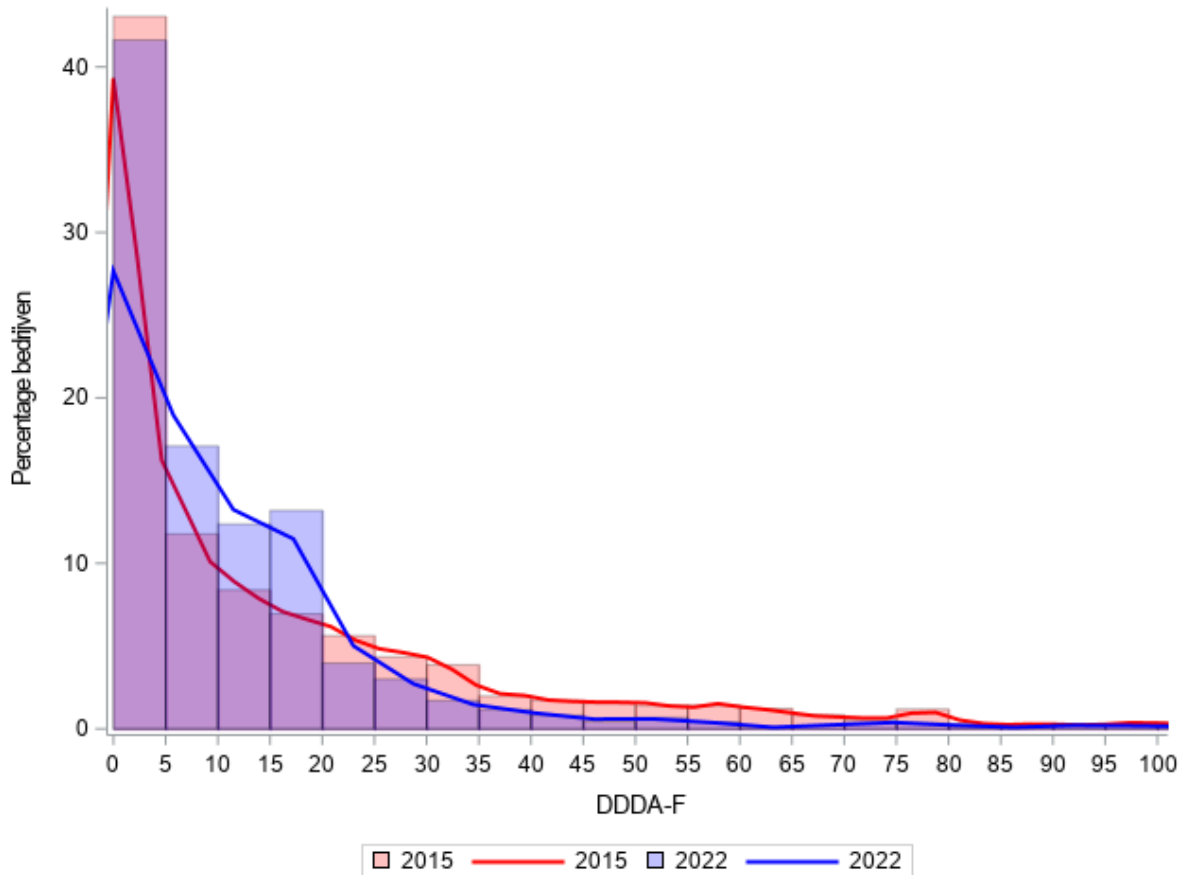


Figure A21. Scatter plot of 2021 and 2022 DDDA_F values for farms with weaner pigs. The red solid lines represent the action threshold defined by the SDa. The number of farms with persistently high usage levels is listed in the upper-right corner of the scatter plot

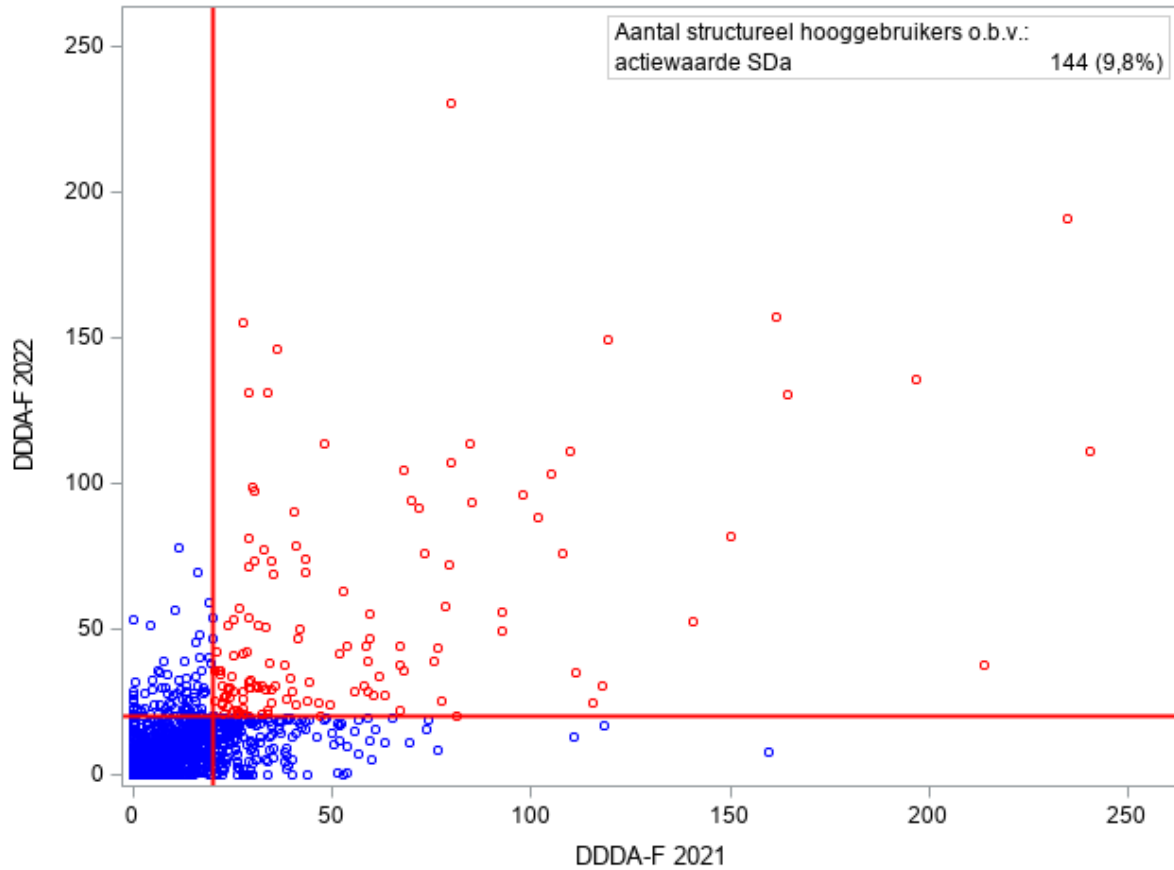


Table A27. Antibiotic use in DDDA_F at farms with weaner pigs in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Amphenicols	Parenteral	81.9%	0.00	0.00	0.38
1	Macrolides/lincosamides	Oral	90.6%	0.00	0.00	0.39
1	Macrolides/lincosamides	Parenteral	95.8%	0.00	0.00	0.02
1	Penicillins	Parenteral	59.1%	0.00	0.54	0.62
1	Pleuromutilins	Oral	99.5%	0.00	0.00	0.04
1	Pleuromutilins	Parenteral	98.6%	0.00	0.00	0.02
1	Tetracyclines	Oral	68.1%	0.00	2.86	3.89
1	Tetracyclines	Parenteral	77.4%	0.00	0.00	0.44
1	Trimethoprim/sulfonamides	Oral	68.3%	0.00	1.55	2.25
1	Trimethoprim/sulfonamides	Parenteral	87.9%	0.00	0.00	0.06
2	Aminoglycosides	Oral	96.8%	0.00	0.00	0.10
2	Aminopenicillins	Oral	75.7%	0.00	0.00	3.34
2	Aminopenicillins	Parenteral	63.2%	0.00	0.32	0.54
2	Quinolones	Oral	99.9%	0.00	0.00	0.00
2	Fixed-dose combinations	Parenteral	93.1%	0.00	0.00	0.03
2	Long-acting macrolides	Parenteral	79.7%	0.00	0.00	1.34
3	Polymyxins	Oral	81.4%	0.00	0.00	1.00
3	Polymyxins	Parenteral	83.2%	0.00	0.00	0.14

2.3 Farms with fattening pigs

Number of farms: 2.931

Number of farms with $DDDA_F=0$: 705 (24.1%)

Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 1 (0.0%)

Number of broiler farms that used polymyxins: 88 (3.0%)

Table A28. Antibiotic use in $DDDA_F$ at farms with fattening pigs from 2015 to 2022*

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

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

Figure A22. 2015 and 2022 $DDDA_F$ distributions for farms with fattening pigs

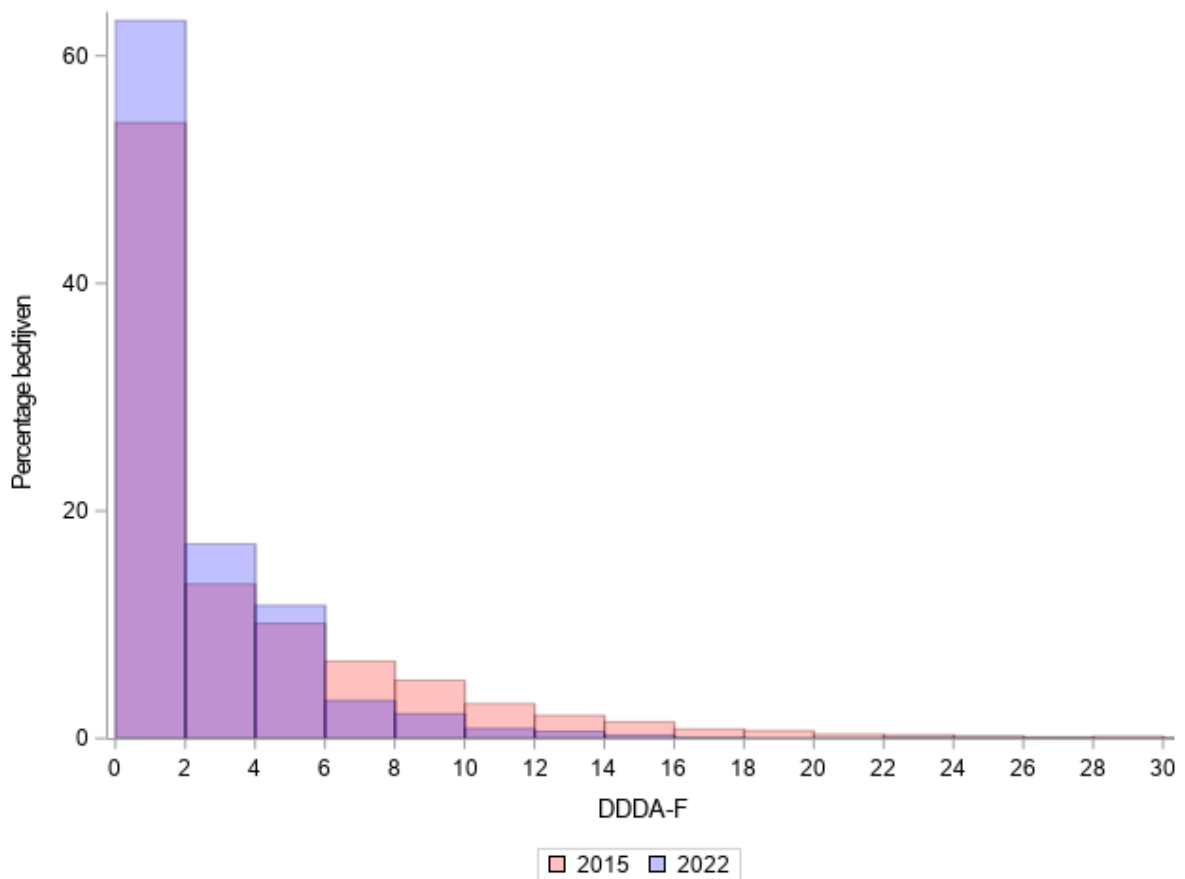


Figure A23. Scatter plot of 2021 and 2022 DDDA_F values for farms with fattening pigs. The red solid lines represent the action threshold defined by the SDa. The number of farms with persistently high usage levels is listed in the upper-right corner of the scatter plot

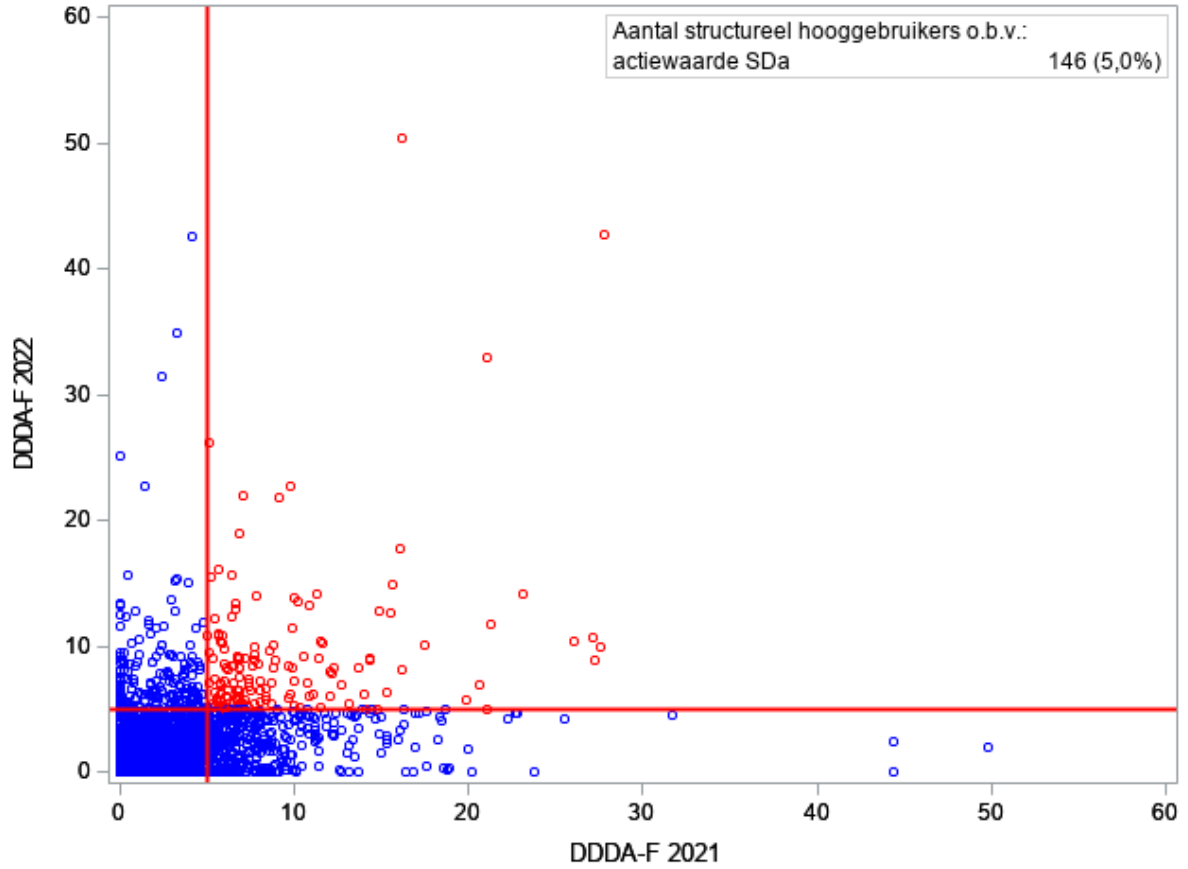


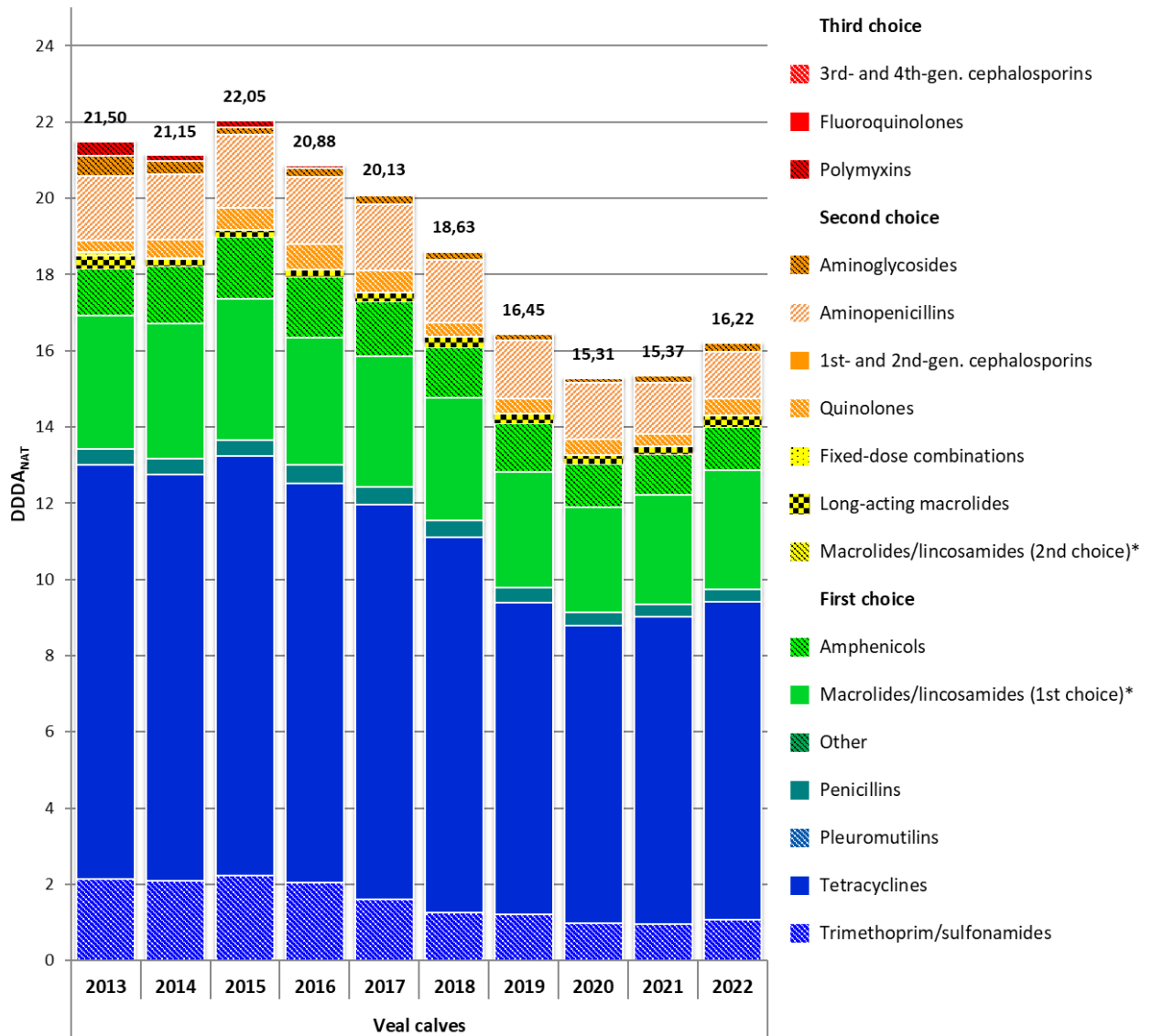
Table A29. Antibiotic use in DDDA_F at farms with fattening pigs in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Amphenicols	Parenteral	69.5%	0.00	0.08	0.21
1	Macrolides/lincosamides	Oral	81.3%	0.00	0.00	0.29
1	Macrolides/lincosamides	Parenteral	83.8%	0.00	0.00	0.02
1	Penicillins	Parenteral	40.3%	0.06	0.27	0.25
1	Pleuromutilins	Oral	98.9%	0.00	0.00	0.03
1	Pleuromutilins	Parenteral	95.9%	0.00	0.00	0.00
1	Tetracyclines	Oral	67.9%	0.00	0.84	0.91
1	Tetracyclines	Parenteral	63.3%	0.00	0.08	0.18
1	Trimethoprim/sulfonamides	Oral	83.2%	0.00	0.00	0.24
1	Trimethoprim/sulfonamides	Parenteral	98.8%	0.00	0.00	0.00
2	Aminoglycosides	Oral	99.7%	0.00	0.00	0.00
2	Aminopenicillins	Oral	96.9%	0.00	0.00	0.03
2	Aminopenicillins	Parenteral	87.9%	0.00	0.00	0.03
2	Quinolones	Oral	99.9%	0.00	0.00	0.00
2	Fixed-dose combinations	Parenteral	98.0%	0.00	0.00	0.01
2	Long-acting macrolides	Parenteral	97.1%	0.00	0.00	0.03
3	Fluoroquinolones	Parenteral	100.0%	0.00	0.00	0.00
3	Polymyxins	Oral	98.7%	0.00	0.00	0.01
3	Polymyxins	Parenteral	98.1%	0.00	0.00	0.00

Veal farming sector

1. Antibiotic use in DDDA_{NAT}

Figure A24. DDDA_{NAT} trends in the veal farming sector over the 2013-2022 period, by pharmacotherapeutic group



* In the poultry farming sector, all macrolides/lincosamides except for lincomycin and spiramycin are categorized as second-choice antibiotics. In other livestock sectors, only long-acting macrolides are categorized as second-choice antibiotics.

2. Antibiotic use in DDDA_F

2.1 White veal farms

Number of farms: 765

Number of farms with DDDA_F = 0: 2 (0.3%)

Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 105 (13.7%)

Number of broiler farms that used polymyxins: 49 (6.4%)

Table A30. Antibiotic use in DDDA_F at white veal farms from 2011 to 2022*

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	823	19.9	19.3	23.9	29.6
2020	813	19.1	18.5	22.9	27.9
2021	798	19.0	18.5	22.7	27.5
2022	765	19.0	18.4	23.0	28.1

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

Figure A25. 2011 and 2022 DDDA_F distributions for white veal farms

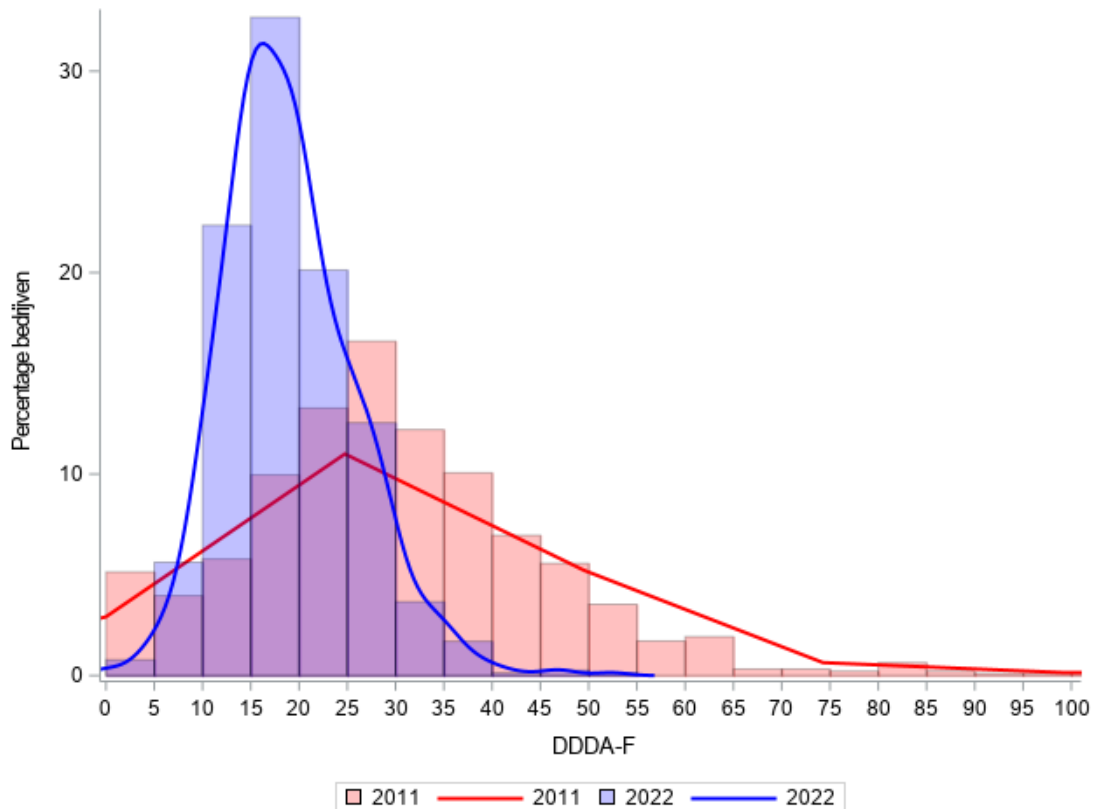


Figure A26. Scatter plot of 2021 and 2022 DDDA_F values for white veal farms. The red solid lines represent the action threshold defined by the SDa. The number of farms with persistently high usage levels (farms whose usage levels exceeded the action threshold in both years) is listed in the upper-left corner of the scatter plot

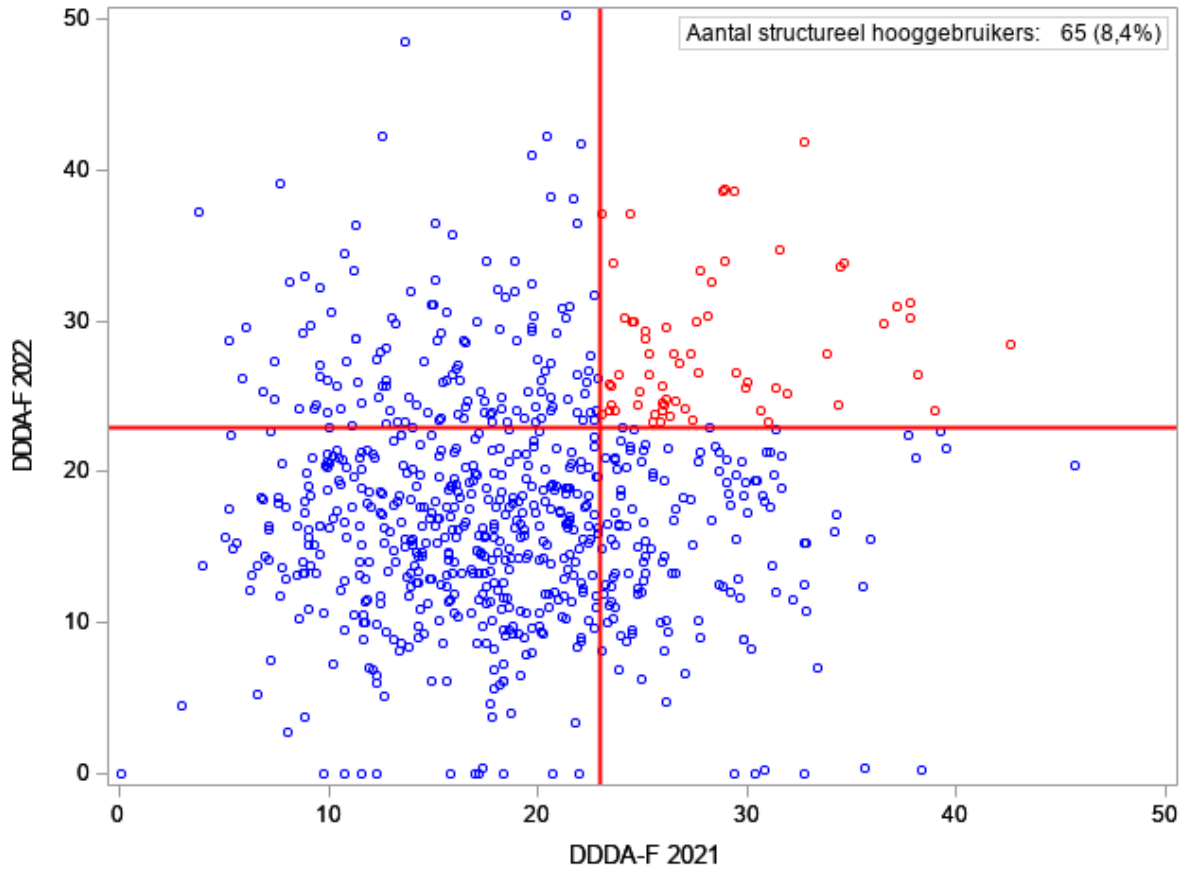


Table A31. Antibiotic use in DDDA_F at white veal farms in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Amphenicols	Parenteral	0.8%	0.83	1.27	1.00
1	Macrolides/lincosamides	Oral	3.3%	3.61	4.58	3.63
1	Macrolides/lincosamides	Parenteral	35.3%	0.01	0.06	0.08
1	Penicillins	Parenteral	5.1%	0.30	0.49	0.38
1	Tetracyclines	Oral	0.3%	9.58	12.64	10.17
1	Tetracyclines	Parenteral	62.2%	0.00	0.02	0.03
1	Trimethoprim/sulfonamides	Oral	51.5%	0.00	1.36	0.91
1	Trimethoprim/sulfonamides	Parenteral	27.6%	0.03	0.06	0.05
2	Aminoglycosides	Oral	32.8%	0.02	0.06	0.18
2	Aminoglycosides	Parenteral	52.9%	0.00	0.07	0.06
2	Aminopenicillins	Oral	34.4%	0.36	2.77	1.63
2	Aminopenicillins	Parenteral	6.7%	0.10	0.18	0.13
2	Quinolones	Oral	74.2%	0.00	0.10	0.51
2	Fixed-dose combinations	Parenteral	85.8%	0.00	0.00	0.00
2	Long-acting macrolides	Parenteral	24.1%	0.15	0.34	0.25
3	Fluoroquinolones	Oral	99.9%	0.00	0.00	0.00
3	Fluoroquinolones	Parenteral	86.4%	0.00	0.00	0.01
3	Polymyxins	Oral	98.7%	0.00	0.00	0.02
3	Polymyxins	Parenteral	94.4%	0.00	0.00	0.00

2.2 Rosé veal starter farms

Number of farms: 195

Number of farms with $DDDA_F = 0$: 2 (1.0%)

Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 26 (13.3%)

Number of broiler farms that used polymyxins: 6 (3.1%)

Table A32. Antibiotic use in $DDDA_F$ at rosé veal starter farms from 2011 to 2022*

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	210	75.9	74.3	94.1	107.1
2020	197	69.1	69.7	83.2	95.0
2021	185	69.2	69.9	83.4	97.8
2022	195	69.2	68.9	85.1	99.7

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

Figure A27. 2011 and 2022 $DDDA_F$ distributions for rosé veal starter farms

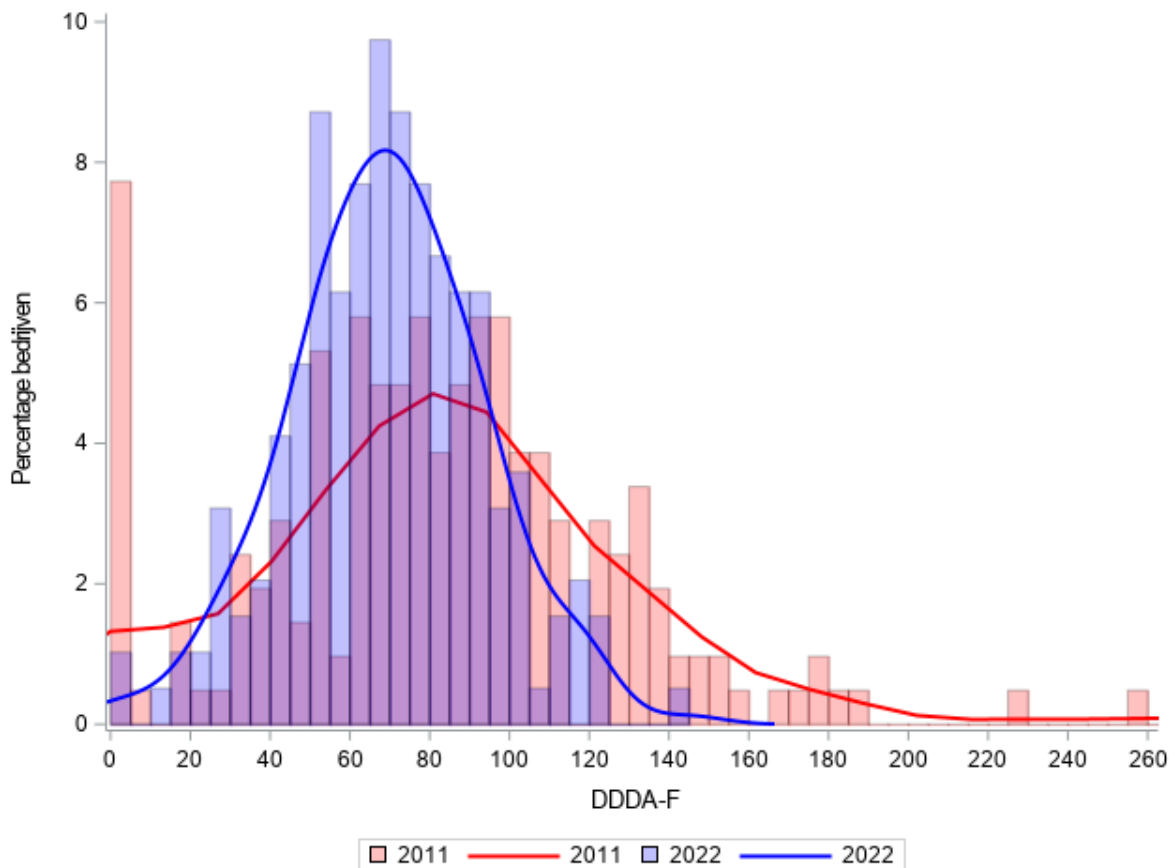


Figure A28. Scatter plot of 2021 and 2022 DDDA_F values for rosé veal starter farms. The red solid lines represent the action threshold defined by the SDa. The number of farms with persistently high usage levels (farms whose usage levels exceeded the action threshold in both years) is listed in the upper-right corner of the scatter plot

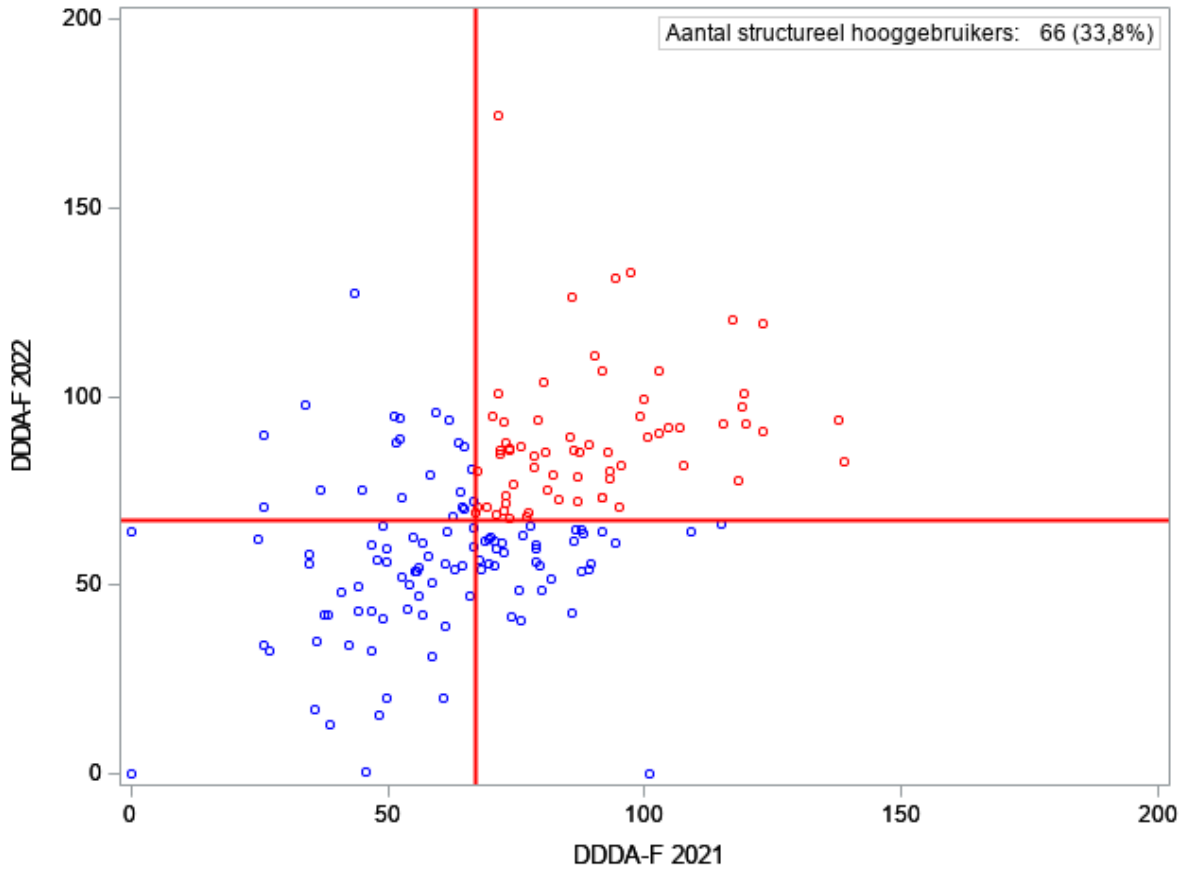


Table A33. Antibiotic use in DDDA_F at rosé veal starter farms in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Amphenicols	Parenteral	2.1%	4.54	7.05	5.70
1	Macrolides/lincosamides	Oral	5.6%	16.30	20.29	15.48
1	Macrolides/lincosamides	Parenteral	32.8%	0.05	0.31	0.27
1	Penicillins	Parenteral	10.3%	1.00	1.84	1.37
1	Tetracyclines	Oral	1.0%	35.49	45.02	35.24
1	Tetracyclines	Parenteral	62.1%	0.00	0.12	0.16
1	Trimethoprim/sulfonamides	Oral	33.3%	3.95	9.14	5.96
1	Trimethoprim/sulfonamides	Parenteral	34.9%	0.07	0.33	0.27
2	Aminoglycosides	Oral	53.3%	0.00	0.18	0.55
2	Aminoglycosides	Parenteral	45.1%	0.05	0.56	0.35
2	Aminopenicillins	Oral	65.1%	0.00	1.21	1.65
2	Aminopenicillins	Parenteral	11.8%	0.30	0.56	0.41
2	Quinolones	Oral	86.2%	0.00	0.00	0.72
2	Fixed-dose combinations	Parenteral	92.8%	0.00	0.00	0.01
2	Long-acting macrolides	Parenteral	33.8%	0.51	1.59	1.01
3	Fluoroquinolones	Parenteral	86.7%	0.00	0.00	0.05
3	Polymyxins	Oral	99.5%	0.00	0.00	0.01
3	Polymyxins	Parenteral	96.9%	0.00	0.00	0.00

2.3 Rosé veal fattening farms

Number of farms: 536

Number of farms with $DDDA_F = 0$: 38 (7.1%)

Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 17 (3.2%)

Number of broiler farms that used polymyxins: 9 (1.7%)

Table A34. Antibiotic use in $DDDA_F$ at rosé veal fattening farms from 2011 to 2022*

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	732	3.9	1.9	6.1	10.5
2020	680	4.1	1.7	5.9	11.9
2021	579	3.9	1.6	6.0	11.2
2022	536	4.8	1.6	7.3	14.8

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

Figure A29. 2011 and 2022 $DDDA_F$ distributions for rosé veal fattening farms

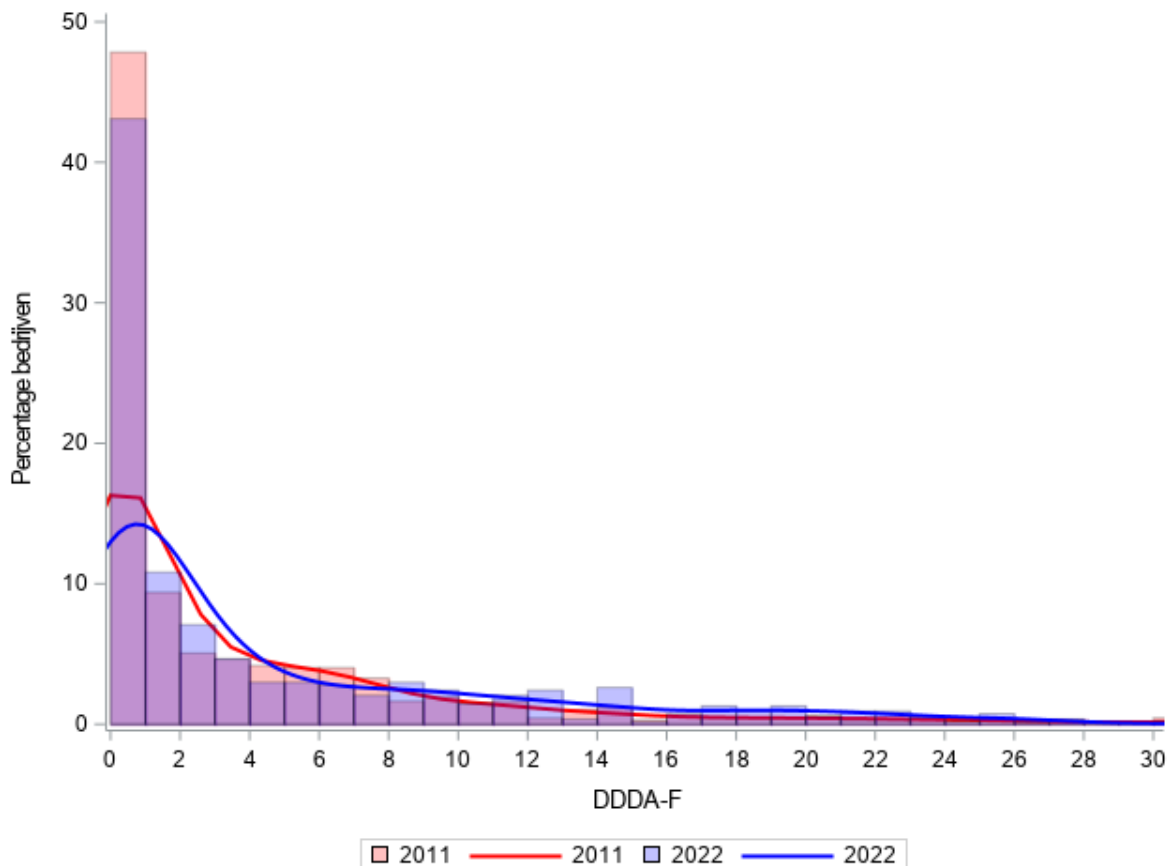


Figure A30. Scatter plot of 2021 and 2022 DDDA_F values for rosé veal fattening farms. The red solid lines represent the action threshold defined by the SDa. The number of farms with persistently high usage levels (farms whose usage levels exceeded the action threshold in both years) is listed in the upper-left corner of the scatter plot

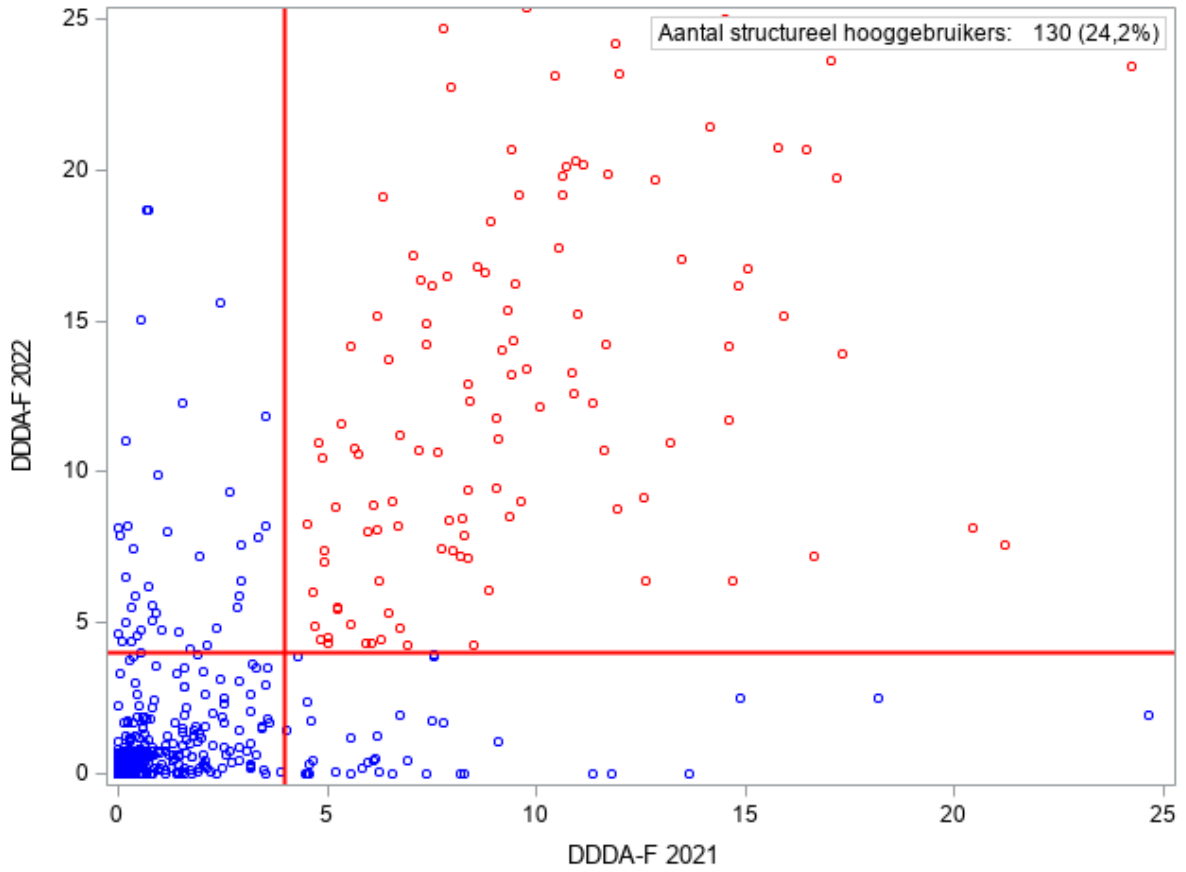


Table A35. Antibiotic use in DDDA_F at rosé veal fattening farms in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Amphenicols	Parenteral	15.1%	0.32	0.77	0.61
1	Macrolides/lincosamides	Oral	74.6%	0.00	0.14	0.68
1	Macrolides/lincosamides	Parenteral	74.4%	0.00	0.00	0.03
1	Penicillins	Parenteral	35.8%	0.08	0.22	0.19
1	Tetracyclines	Oral	50.2%	0.00	4.19	2.47
1	Tetracyclines	Parenteral	81.2%	0.00	0.00	0.02
1	Trimethoprim/sulfonamides	Oral	70.7%	0.00	0.19	0.43
1	Trimethoprim/sulfonamides	Parenteral	69.4%	0.00	0.01	0.02
2	Aminoglycosides	Oral	87.1%	0.00	0.00	0.02
2	Aminoglycosides	Parenteral	89.9%	0.00	0.00	0.01
2	Aminopenicillins	Oral	92.7%	0.00	0.00	0.06
2	Aminopenicillins	Parenteral	45.9%	0.01	0.07	0.06
2	Quinolones	Oral	96.8%	0.00	0.00	0.02
2	Fixed-dose combinations	Parenteral	93.8%	0.00	0.00	0.00
2	Long-acting macrolides	Parenteral	57.6%	0.00	0.17	0.18
3	Fluoroquinolones	Parenteral	96.8%	0.00	0.00	0.00
3	Polymyxins	Oral	99.8%	0.00	0.00	0.00
3	Polymyxins	Parenteral	98.5%	0.00	0.00	0.00

2.4 Rosé veal combination farms

Number of farms: 66

Number of farms with $DDDA_F = 0$: 1 (1.5%)

Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 13 (19.7%)

Number of broiler farms that used polymyxins: 4 (6.1%)

Table A36. Antibiotic use in $DDDA_F$ at rosé veal combination farms from 2011 to 2022*

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	76	16.5	14.7	22.1	30.5
2020	74	16.0	15.7	21.3	25.2
2021	64	16.3	15.5	19.7	28.7
2022	66	16.9	15.4	23.8	30.8

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

Figure A31. 2011 and 2022 $DDDA_F$ distributions for rosé veal combination farms

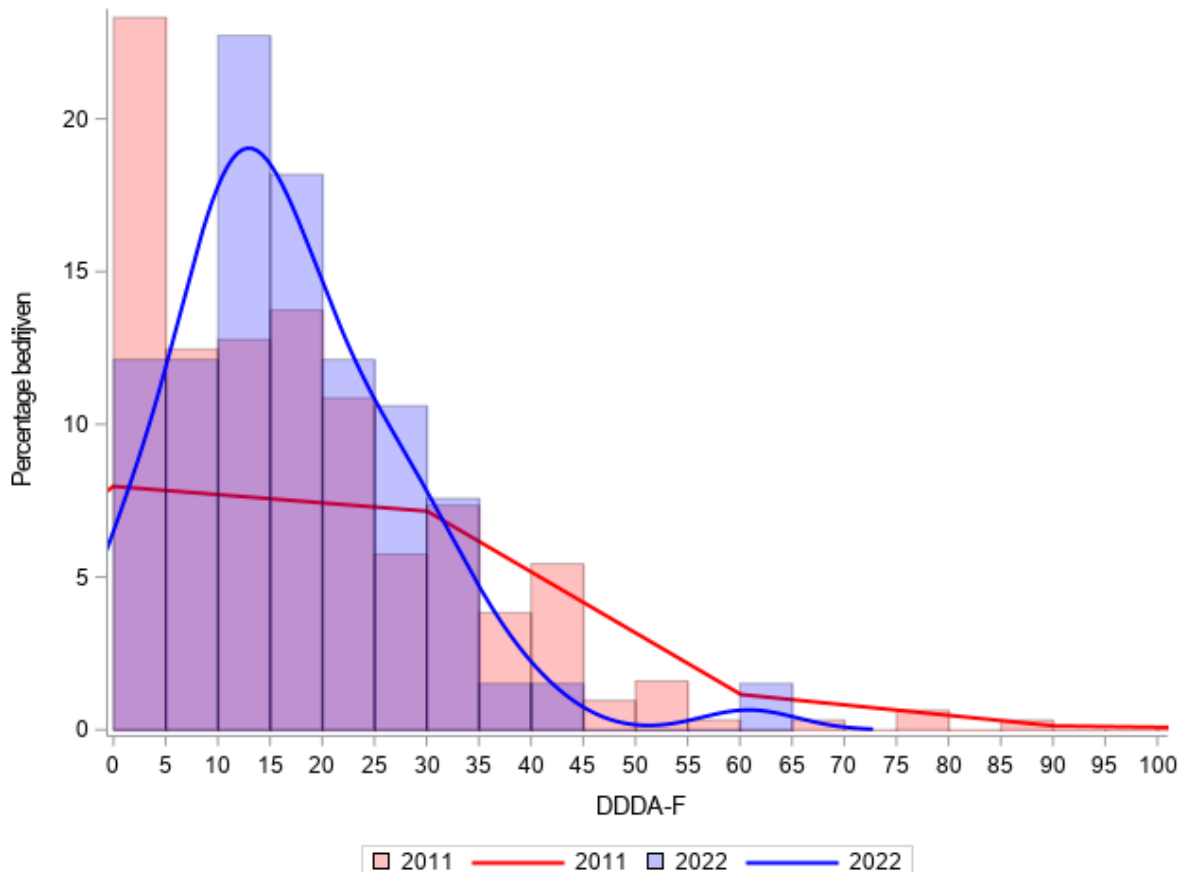


Figure A32. Scatter plot of 2021 and 2022 DDDA_F values for rosé veal combination farms. The red solid lines represent the action threshold defined by the SDa. The number of farms with persistently high usage levels is listed in the upper-right corner of the scatter plot

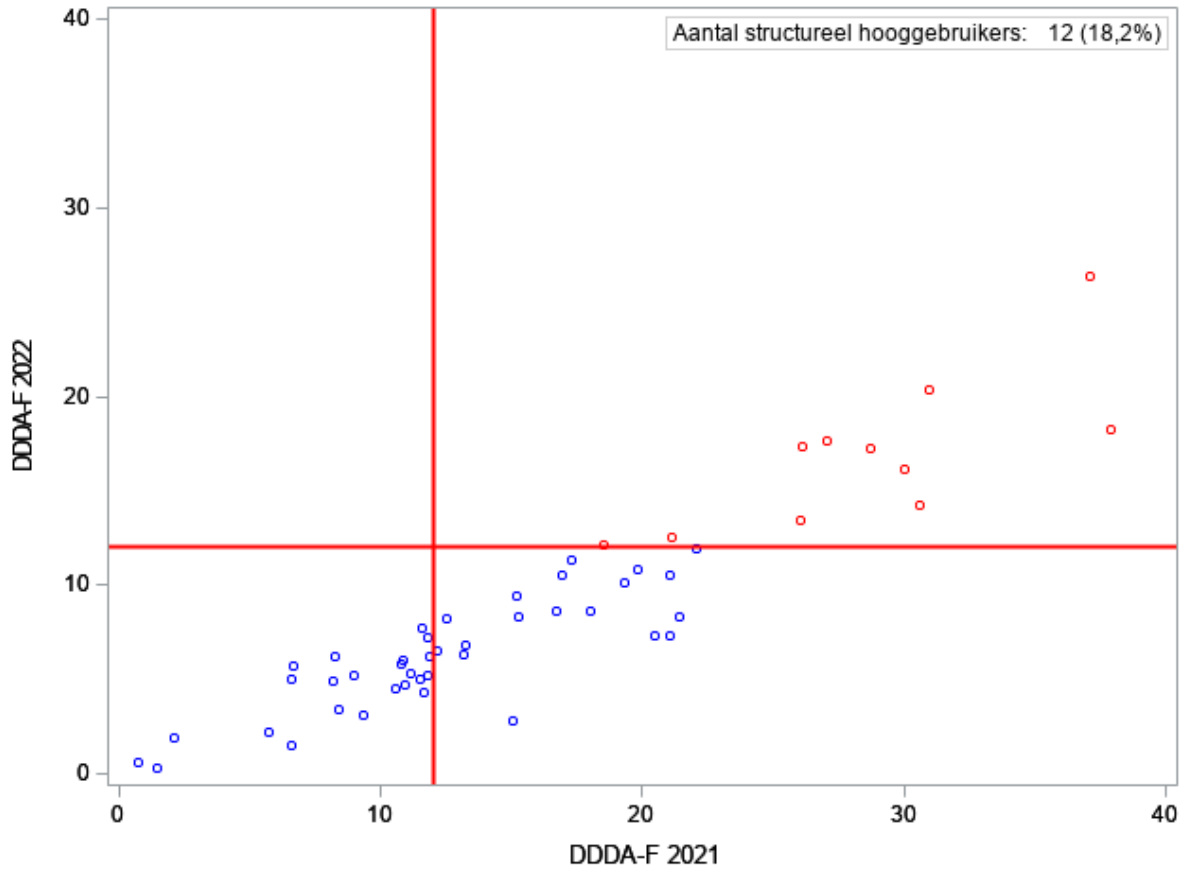


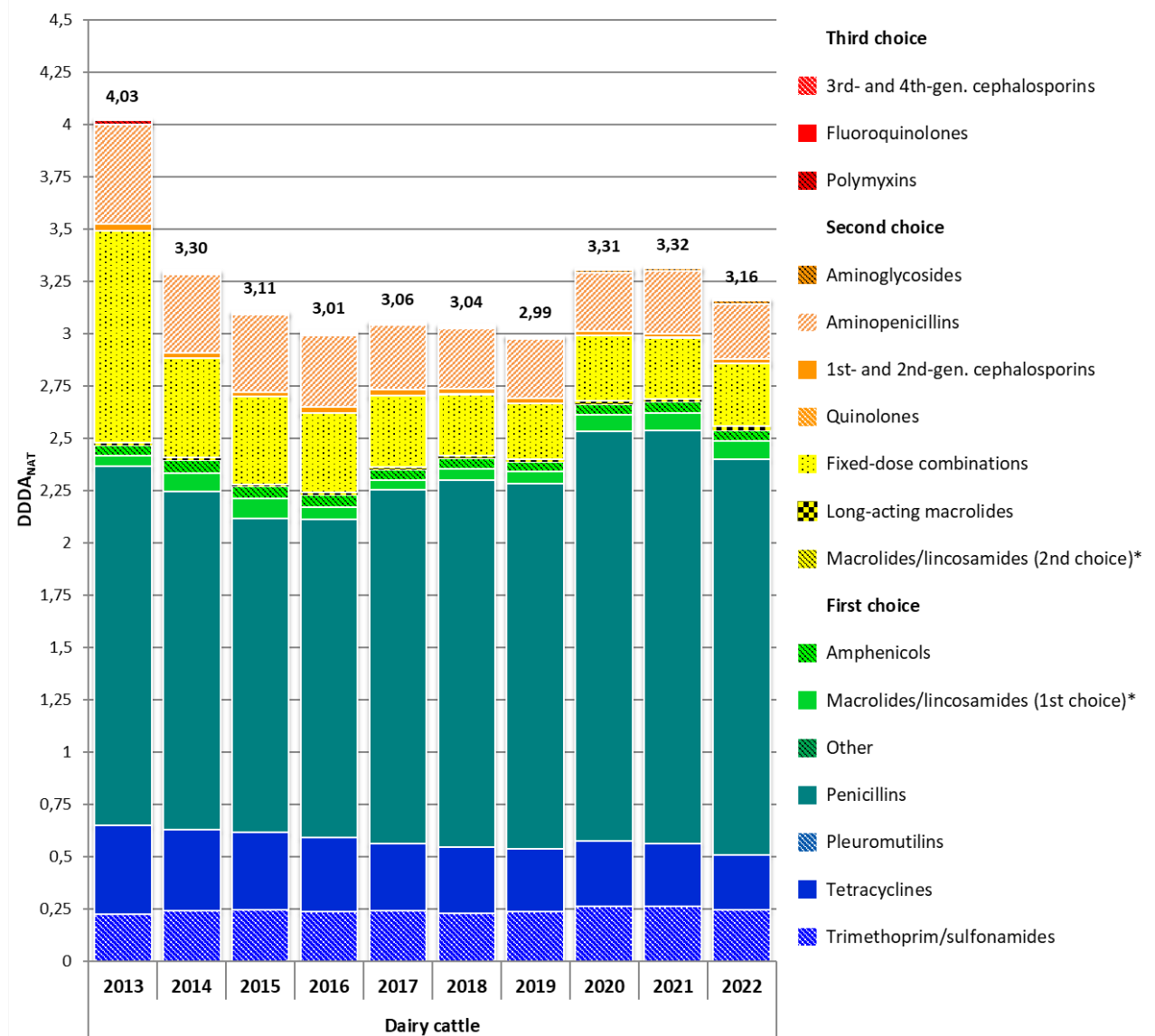
Table A37. Antibiotic use in DDDA_F at rosé veal combination farms in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Amphenicols	Parenteral	3.0%	0.95	1.85	1.43
1	Macrolides/lincosamides	Oral	15.2%	3.08	4.37	3.06
1	Macrolides/lincosamides	Parenteral	47.0%	0.00	0.04	0.14
1	Penicillins	Parenteral	7.6%	0.18	0.34	0.33
1	Tetracyclines	Oral	9.1%	8.21	10.61	9.10
1	Tetracyclines	Parenteral	66.7%	0.00	0.02	0.02
1	Tetracyclines	Intrauterine	98.5%	0.00	0.00	0.00
1	Trimethoprim/sulfonamides	Oral	37.9%	0.49	2.06	1.29
1	Trimethoprim/sulfonamides	Parenteral	37.9%	0.01	0.05	0.03
2	Aminoglycosides	Oral	37.9%	0.02	0.13	0.17
2	Aminoglycosides	Parenteral	43.9%	0.01	0.08	0.07
2	Aminopenicillins	Intramammair	98.5%	0.00	0.00	0.00
2	Aminopenicillins	Oral	59.1%	0.00	0.23	0.33
2	Aminopenicillins	Parenteral	7.6%	0.10	0.22	0.14
2	Quinolones	Oral	72.7%	0.00	0.29	0.30
2	Fixed-dose combinations	Parenteral	80.3%	0.00	0.00	0.01
2	Long-acting macrolides	Parenteral	30.3%	0.23	0.55	0.44
3	Fluoroquinolones	Oral	98.5%	0.00	0.00	0.01
3	Fluoroquinolones	Parenteral	81.8%	0.00	0.00	0.01
3	Polymyxins	Oral	98.5%	0.00	0.00	0.00
3	Polymyxins	Parenteral	95.5%	0.00	0.00	0.00

Dairy cattle farming sector

1. Antibiotic use in DDDA_{NAT}

Figure A33. DDDA_{NAT} trends in the dairy cattle farming sector over the 2013-2022 period, by pharmacotherapeutic group



* In the poultry farming sector, all macrolides/lincosamides except for lincomycin and spiramycin are categorized as second-choice antibiotics. In other livestock sectors, only long-acting macrolides are categorized as second-choice antibiotics.

2. Antibiotic use in DDDA_F

Number of farms: 14,474

Number of farms with DDDA_F=0: 262 (1.8%)

Number of farms that used third- and fourth-generation cephalosporins: 45 (0.3%)

Number of broiler farms that used fluoroquinolones: 972 (6.7%)

Number of broiler farms that used polymyxins: 161 (1.1%)

Table A38. Antibiotic use at dairy cattle farms, presented as overall antibiotic use from 2012 to 2022 (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

* 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
14,474	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
14,474	0.7	0.5	0.9	1.5

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

N	Mean	Median	P75	P90
14,474	2.0	0.0	0.0	4.6

Figure A34. 2012 and 2022 DDDA_F distributions for dairy cattle farms

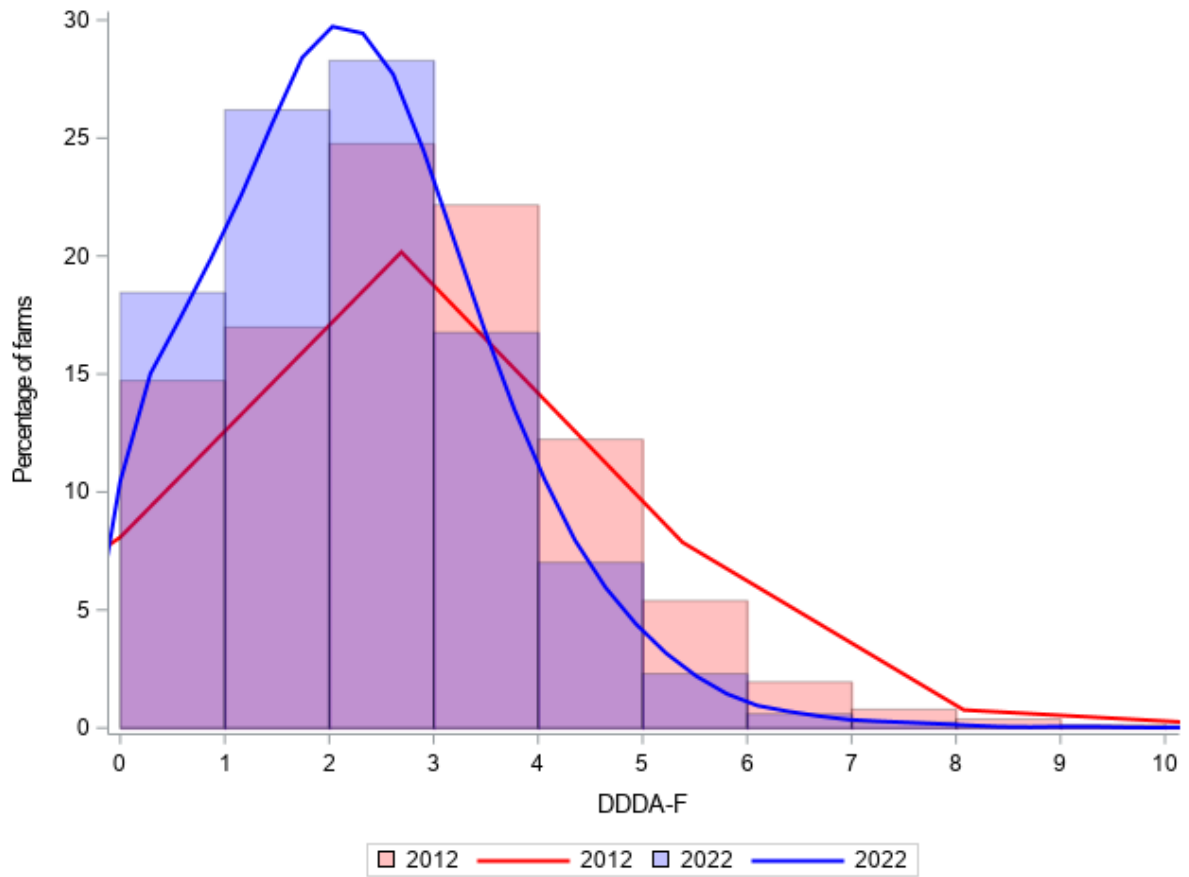


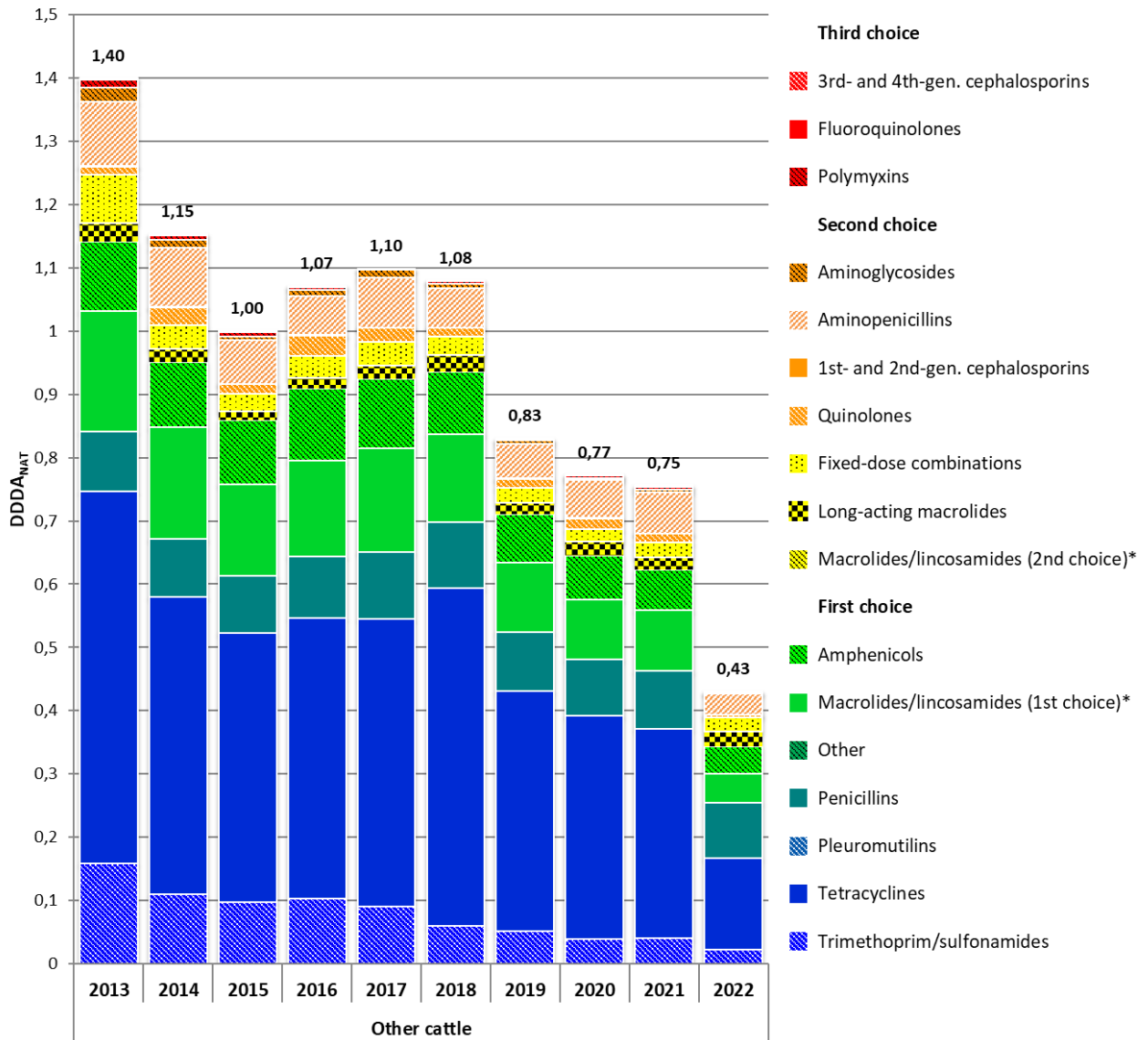
Table A39. Antibiotic use in DDDA_F at dairy cattle farms in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Amphenicols	Parenteral	56.2%	0.00	0.05	0.03
1	Macrolides/lincosamides	Oral	100.0%	0.00	0.00	0.00
1	Macrolides/lincosamides	Parenteral	66.2%	0.00	0.04	0.06
1	Penicillins	Intramammair	56.1%	0.00	0.33	0.24
1	Penicillins	Intramammary for dry cow therapy	18.4%	0.86	1.39	0.90
1	Penicillins	Parenteral	21.1%	0.12	0.31	0.23
1	Tetracyclines	Oral	98.3%	0.00	0.00	0.00
1	Tetracyclines	Parenteral	22.9%	0.08	0.20	0.14
1	Tetracyclines	Intrauterine	58.7%	0.00	0.06	0.04
1	Trimethoprim/sulfonamides	Oral	99.0%	0.00	0.00	0.00
1	Trimethoprim/sulfonamides	Parenteral	17.9%	0.11	0.24	0.18
2	Aminoglycosides	Oral	83.8%	0.00	0.00	0.01
2	Aminoglycosides	Parenteral	97.7%	0.00	0.00	0.00
2	Aminopenicillins	Intramammair	37.6%	0.07	0.21	0.14
2	Aminopenicillins	Oral	100.0%	0.00	0.00	0.00
2	Aminopenicillins	Parenteral	41.9%	0.02	0.08	0.06
2	1st- and 2nd-gen. cephalosporins	Intramammair	92.6%	0.00	0.00	0.01
2	1st- and 2nd-gen. cephalosporins	Intrauterine	79.7%	0.00	0.00	0.01
2	Quinolones	Oral	100.0%	0.00	0.00	0.00
2	Fixed-dose combinations	Intramammair	47.3%	0.02	0.21	0.15
2	Fixed-dose combinations	Intramammary for dry cow therapy	95.1%	0.00	0.00	0.02
2	Fixed-dose combinations	Parenteral	67.4%	0.00	0.03	0.03
2	Long-acting macrolides	Parenteral	85.0%	0.00	0.00	0.01
3	3rd- and 4th-gen. cephalosporins	Intramammair	99.8%	0.00	0.00	0.00
3	3rd- and 4th-gen. cephalosporins	Parenteral	99.9%	0.00	0.00	0.00
3	Fluoroquinolones	Oral	100.0%	0.00	0.00	0.00
3	Fluoroquinolones	Parenteral	93.3%	0.00	0.00	0.00
3	Polymyxins	Oral	99.9%	0.00	0.00	0.00
3	Polymyxins	Parenteral	99.0%	0.00	0.00	0.00

Non-dairy cattle farming sector

1. Antibiotic use in DDDA_{NAT}

Figure A35. DDDA_{NAT} trends in the non-dairy cattle farming sector over the 2013-2022 period, by pharmacotherapeutic group



* In the poultry farming sector, all macrolides/lincosamides except for lincomycin and spiramycin are categorized as second-choice antibiotics. In other livestock sectors, only long-acting macrolides are categorized as second-choice antibiotics.

2. Antibiotic use in DDDA_F

2.1 Suckler cow farms

Number of farms: 7,876

Number of farms with DDDA_F=0: 4,054 (51.5%)

Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 84 (1.1%)

Number of broiler farms that used polymyxins: 23 (0.3%)

Table A40. Antibiotic use in DDDA_F at suckler cow farms from 2012 to 2022*

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

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

Figure A36. 2012 and 2022 DDDA_F distributions for suckler cow farms (no probability density functions can be shown due to too little variation)

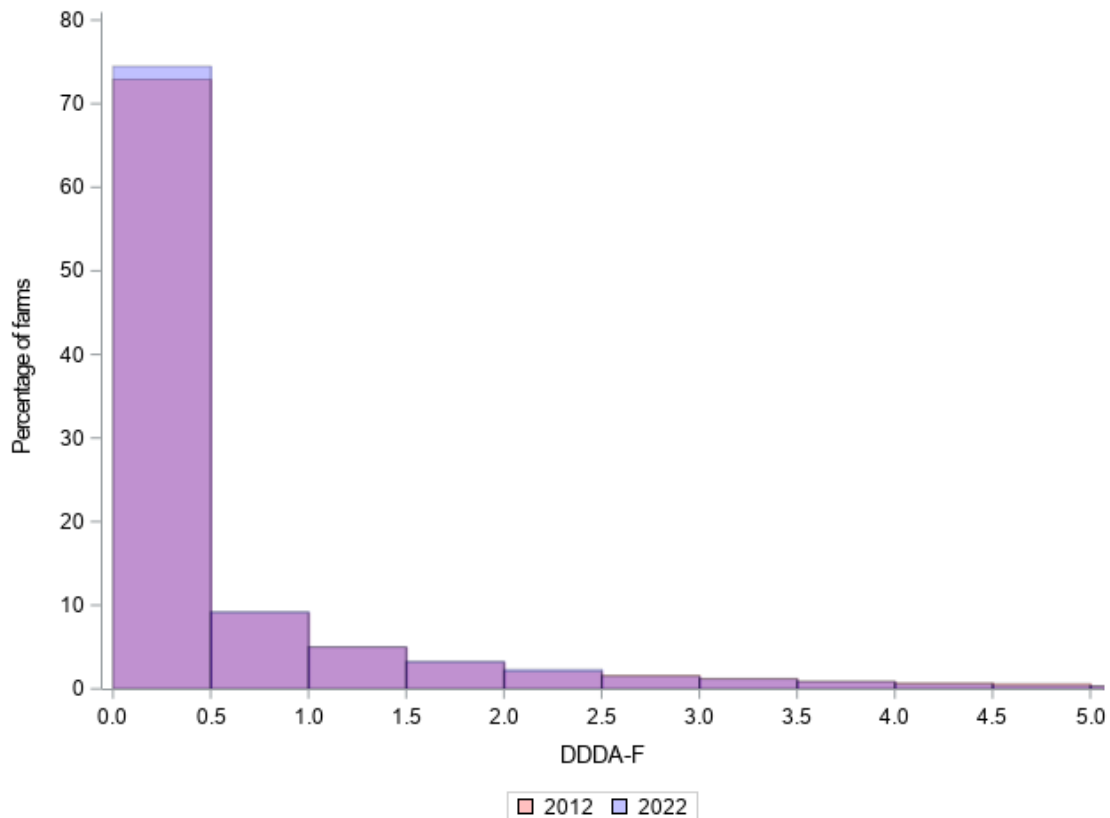


Table A41. Antibiotic use in DDDA_F at suckler cow farms in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Amphenicols	Parenteral	85.6%	0.00	0.00	0.04
1	Macrolides/lincosamides	Oral	99.9%	0.00	0.00	0.00
1	Macrolides/lincosamides	Parenteral	96.3%	0.00	0.00	0.01
1	Penicillins	Intramammary	98.8%	0.00	0.00	0.01
1	Penicillins	Intramammary for dry cow therapy	97.1%	0.00	0.00	0.03
1	Penicillins	Parenteral	75.7%	0.00	0.00	0.18
1	Tetracyclines	Oral	99.4%	0.00	0.00	0.01
1	Tetracyclines	Parenteral	85.5%	0.00	0.00	0.05
1	Tetracyclines	Intrauterine	90.4%	0.00	0.00	0.02
1	Trimethoprim/sulfonamides	Oral	99.8%	0.00	0.00	0.00
1	Trimethoprim/sulfonamides	Parenteral	89.5%	0.00	0.00	0.02
2	Aminoglycosides	Oral	98.6%	0.00	0.00	0.00
2	Aminoglycosides	Parenteral	99.2%	0.00	0.00	0.00
2	Aminopenicillins	Intramammary	97.2%	0.00	0.00	0.01
2	Aminopenicillins	Oral	100.0%	0.00	0.00	0.00
2	Aminopenicillins	Parenteral	85.5%	0.00	0.00	0.05
2	1st- and 2nd-gen. cephalosporins	Intramammary	99.8%	0.00	0.00	0.00
2	1st- and 2nd-gen. cephalosporins	Intrauterine	99.3%	0.00	0.00	0.00
2	Quinolones	Oral	100.0%	0.00	0.00	0.00
2	Fixed-dose combinations	Intramammary	98.1%	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	87.9%	0.00	0.00	0.07
2	Long-acting macrolides	Parenteral	93.2%	0.00	0.00	0.03
3	Fluoroquinolones	Parenteral	98.9%	0.00	0.00	0.00
3	Polymyxins	Oral	100.0%	0.00	0.00	0.00
3	Polymyxins	Parenteral	99.7%	0.00	0.00	0.00

2.2 Rearing farms

Number of farms: 713

Number of farms with DDDA_F=0: 508 (71.2%)

Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 1 (0.1%)

Number of broiler farms that used polymyxins: 1 (0.1%)

Table A42. Antibiotic use in DDDA_F at rearing farms from 2012 to 2022*

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

* Only years for which similar DDDA_F 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 A37. 2013 and 2022 DDDA_F distributions for rearing farms (no probability density functions can be shown due to too little variation)

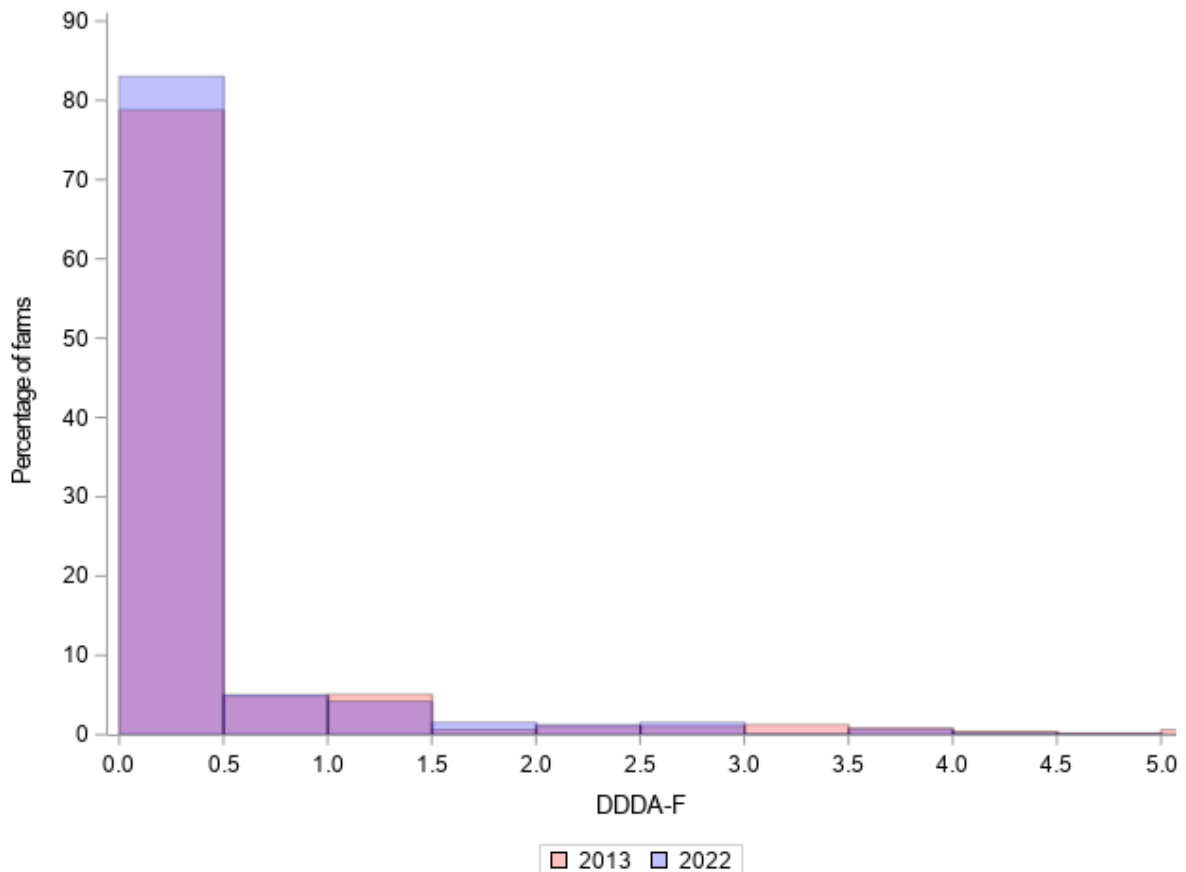


Table A43. Antibiotic use in DDDA_F at rearing farms in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Amphenicols	Parenteral	81.5%	0.00	0.00	0.12
1	Macrolides/lincosamides	Oral	99.0%	0.00	0.00	0.05
1	Macrolides/lincosamides	Parenteral	97.3%	0.00	0.00	0.01
1	Penicillins	Intramammary for dry cow therapy	99.9%	0.00	0.00	0.02
1	Penicillins	Parenteral	87.7%	0.00	0.00	0.06
1	Tetracyclines	Oral	96.6%	0.00	0.00	0.18
1	Tetracyclines	Parenteral	94.2%	0.00	0.00	0.03
1	Tetracyclines	Intrauterine	99.6%	0.00	0.00	0.01
1	Trimethoprim/sulfonamides	Oral	99.3%	0.00	0.00	0.02
1	Trimethoprim/sulfonamides	Parenteral	95.1%	0.00	0.00	0.02
2	Aminoglycosides	Oral	99.3%	0.00	0.00	0.00
2	Aminoglycosides	Parenteral	99.7%	0.00	0.00	0.00
2	Aminopenicillins	Intramammary	99.9%	0.00	0.00	0.00
2	Aminopenicillins	Oral	99.7%	0.00	0.00	0.00
2	Aminopenicillins	Parenteral	96.4%	0.00	0.00	0.01
2	Fixed-dose combinations	Intramammary	99.7%	0.00	0.00	0.00
2	Fixed-dose combinations	Intramammary for dry cow therapy	99.9%	0.00	0.00	0.02
2	Fixed-dose combinations	Parenteral	98.2%	0.00	0.00	0.01
2	Long-acting macrolides	Parenteral	95.4%	0.00	0.00	0.04
3	Fluoroquinolones	Parenteral	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: 2,614

Number of farms with DDDA_F=0: 1,818 (69.5%)

Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 15 (0.6%)

Number of broiler farms that used polymyxins: 9 (0.3%)

Table A44. Antibiotic use in DDDA_F at beef farms from 2012 to 2022*

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

* Only years for which similar DDDA_F 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 A38. 2013 and 2022 DDDA_F distributions for beef farms (no probability density functions can be shown due to too little variation)

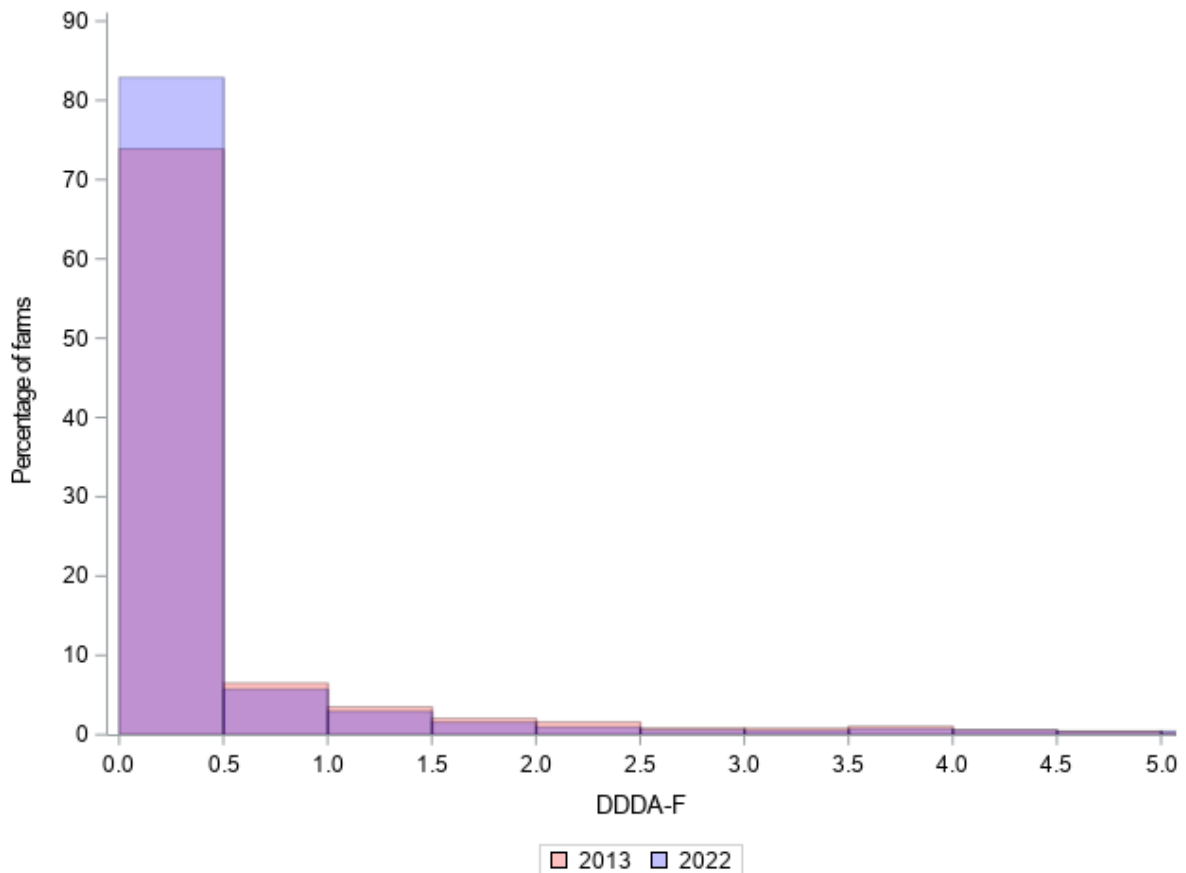


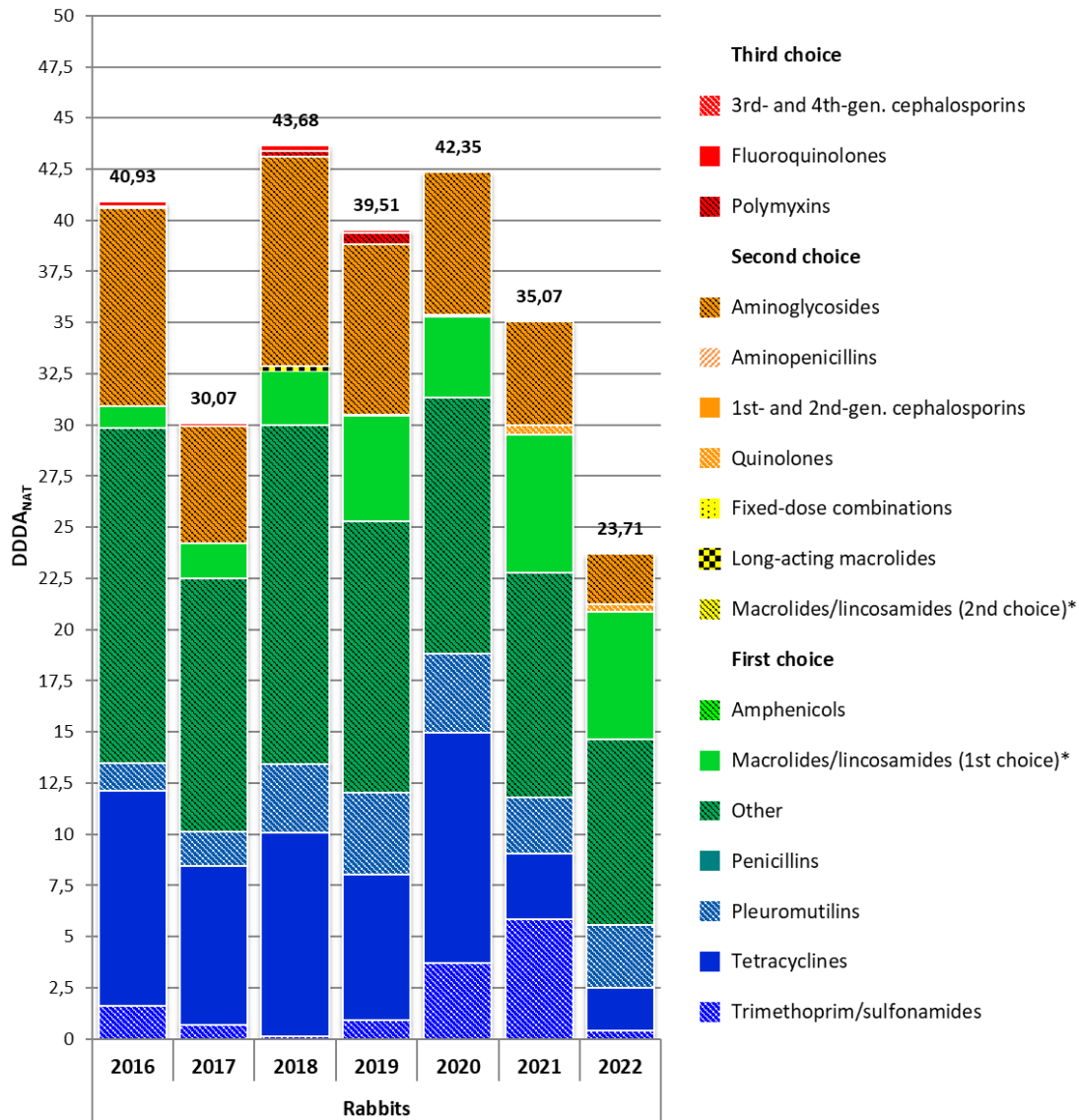
Table A45. Antibiotic use in DDDA_F at beef farms in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Amphenicols	Parenteral	82.3%	0.00	0.00	0.08
1	Macrolides/lincosamides	Oral	96.7%	0.00	0.00	0.06
1	Macrolides/lincosamides	Parenteral	94.9%	0.00	0.00	0.01
1	Penicillins	Intramammary	99.8%	0.00	0.00	0.00
1	Penicillins	Intramammary for dry cow therapy	99.6%	0.00	0.00	0.00
1	Penicillins	Parenteral	84.5%	0.00	0.00	0.08
1	Tetracyclines	Oral	94.3%	0.00	0.00	0.17
1	Tetracyclines	Parenteral	90.8%	0.00	0.00	0.02
1	Tetracyclines	Intrauterine	97.3%	0.00	0.00	0.00
1	Trimethoprim/sulfonamides	Oral	98.2%	0.00	0.00	0.02
1	Trimethoprim/sulfonamides	Parenteral	93.1%	0.00	0.00	0.01
2	Aminoglycosides	Oral	97.7%	0.00	0.00	0.00
2	Aminoglycosides	Parenteral	98.5%	0.00	0.00	0.00
2	Aminopenicillins	Intramammary	99.5%	0.00	0.00	0.00
2	Aminopenicillins	Oral	99.0%	0.00	0.00	0.02
2	Aminopenicillins	Parenteral	87.9%	0.00	0.00	0.02
2	1st- and 2nd-gen. cephalosporins	Intramammary	100.0%	0.00	0.00	0.00
2	1st- and 2nd-gen. cephalosporins	Intrauterine	99.7%	0.00	0.00	0.00
2	Quinolones	Oral	99.6%	0.00	0.00	0.01
2	Fixed-dose combinations	Intramammary	99.5%	0.00	0.00	0.00
2	Fixed-dose combinations	Parenteral	94.3%	0.00	0.00	0.02
2	Long-acting macrolides	Parenteral	91.3%	0.00	0.00	0.05
3	Fluoroquinolones	Parenteral	99.4%	0.00	0.00	0.00
3	Polymyxins	Parenteral	99.7%	0.00	0.00	0.00

Rabbit farming sector

1. Antibiotic use in DDDA_{NAT}

Figure A39. DDDA_{NAT} trends in the rabbit farming sector over the 2016-2022 period, by pharmacotherapeutic group



* In the poultry farming sector, all macrolides/lincosamides except for lincomycin and spiramycin are categorized as second-choice antibiotics. In other livestock sectors, only long-acting macrolides are categorized as second-choice antibiotics.

2. Antibiotic use in DDDA_F

Number of farms: 31

Number of farms with DDDA_F=0: 1 (3.2%)

Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 0 (0.0%)

Number of broiler farms that used polymyxins: 0 (0.0%)

Table A46. Antibiotic use in DDDA_F at rabbit farms from 2016 to 2022*

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

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

Figure A40. 2016 and 2022 DDDA_F distributions for rabbit farms

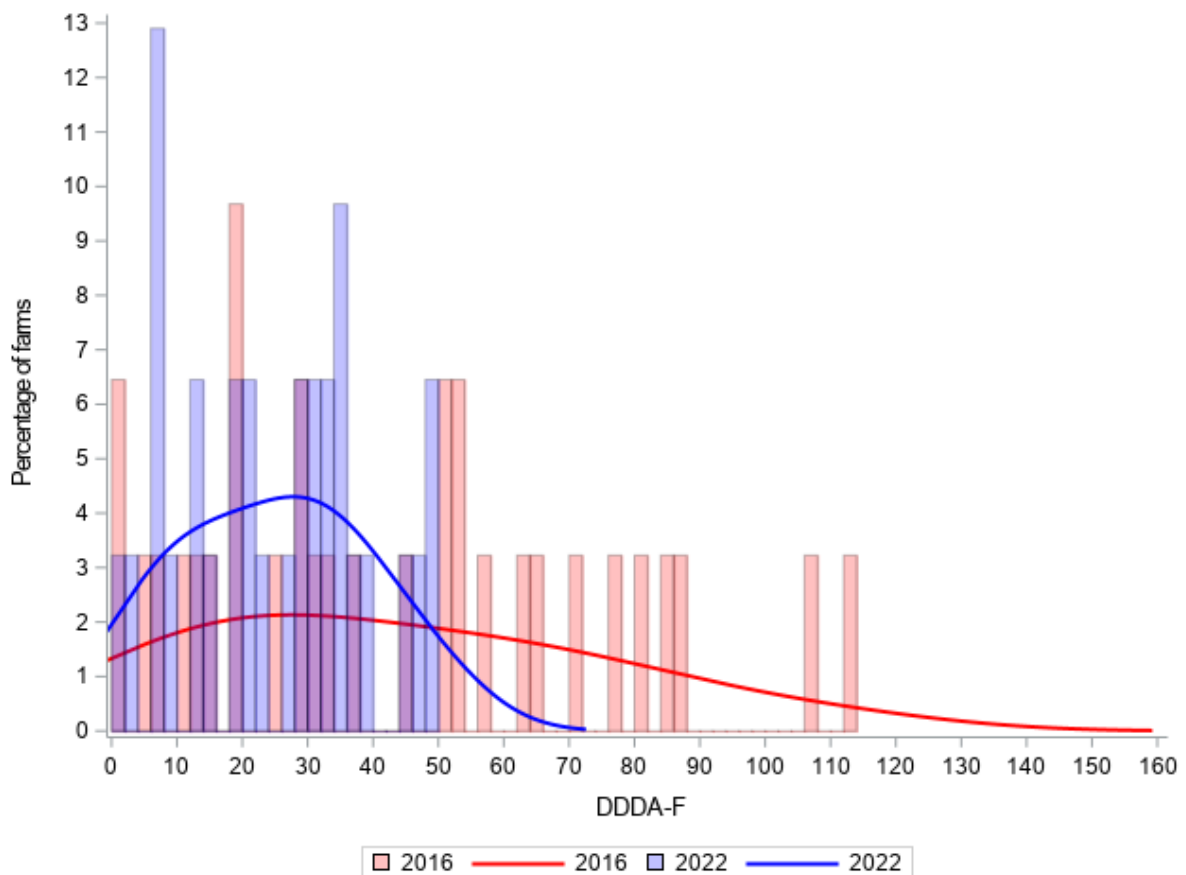


Table A47. Antibiotic use in DDDA_F at rabbit farms in 2022, by pharmacotherapeutic group and route of administration

Category of antibiotics	Pharmacotherapeutic group	Route of administration	% of farms with DDDA _F =0	DDDA _F		
				Median	P75	Mean
1	Macrolides/lincosamides	Oral	41.9%	1.83	6.10	6.44
1	Other	Oral	38.7%	5.23	18.38	9.23
1	Pleuromutilins	Oral	38.7%	1.61	5.68	3.98
1	Tetracyclines	Oral	80.6%	0.00	0.00	0.70
1	Tetracyclines	Parenteral	38.7%	0.49	1.70	1.14
1	Trimethoprim/sulfonamides	Oral	87.1%	0.00	0.00	0.41
1	Trimethoprim/sulfonamides	Parenteral	90.3%	0.00	0.00	0.01
2	Aminoglycosides	Oral	54.8%	0.00	3.81	2.54
2	Quinolones	Oral	93.5%	0.00	0.00	0.28

Dairy goat farming sector

1. Antibiotic use in DDDA_F

Number of farms: 348

Number of farms with DDDA_F=0: 57 (16.4%)

Number of farms that used third- and fourth-generation cephalosporins: 0 (0.0%)

Number of broiler farms that used fluoroquinolones: 6 (1.7%)

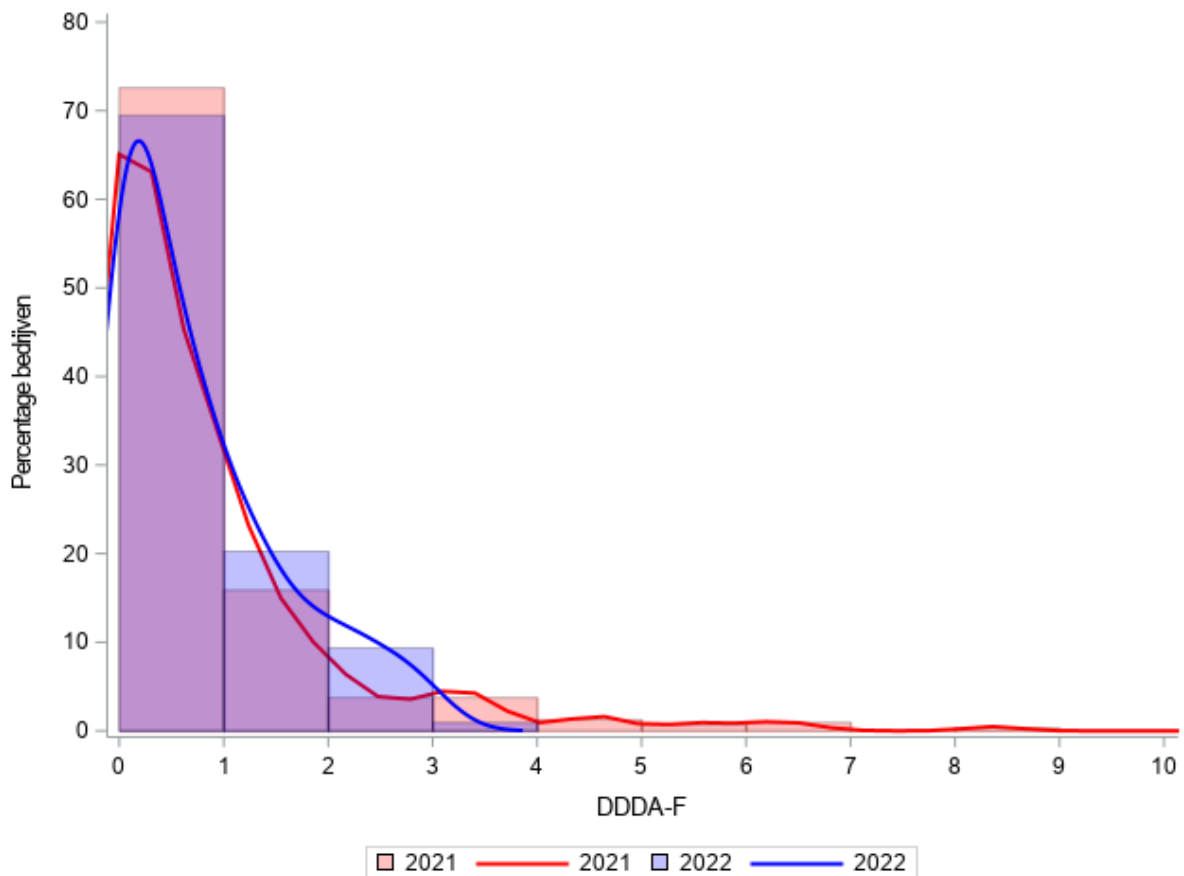
Number of broiler farms that used polymyxins: 3 (0.9%)

Table A48. Antibiotic use in DDDA_F at dairy goat farms in 2022

Year	N	Mean	Median	P75	P90
2021*	322	1.2	0.4	1.1	2.1
2022*	348	1.3	0.6	1.4	2.7

* Estimated to include data from 85% of all dairy goat farms.

Figure A41. 2021 and 2022 DDDA_F distributions for dairy goat farms



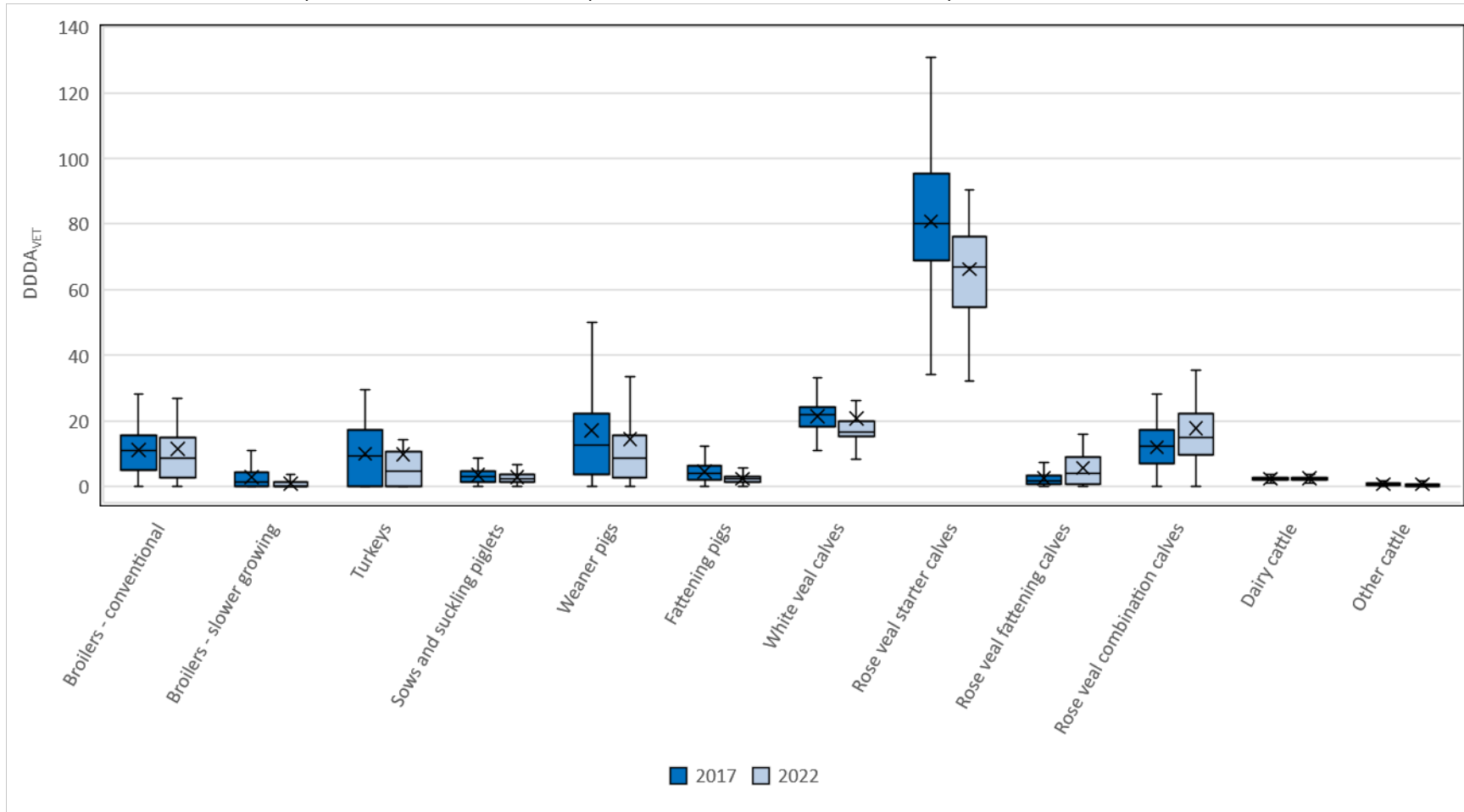
Colistin usage data

Table A49. Colistin usage data in DDDA_F for 2022, by type of farm/production category. Descriptive statistics are provided for the livestock farms that used colistin, and for all livestock farms combined. Med.=median

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	med.	P75	P95	N	mean	med.	P75	P95
Broiler farming Sector	Broiler farms	0.6%	5	4.2	3.0	4.3	11.2	788	0.0	0.0	0.0	0.0
	- Farms with conventional breeds	1.4%	5	4.2	3.0	4.3	11.2	357	0.1	0.0	0.0	0.0
	- Farms with slower growing breeds	0.0%	0	0.0	0.0	0.0	0.0	599	0.0	0.0	0.0	0.0
	Parent/grandparent stock rearing farms	0.0%	0	0.0	0.0	0.0	0.0	90	0.0	0.0	0.0	0.0
	Parent/grandparent stock production farms	0.5%	1	2.6	2.6	2.6	2.6	200	0.0	0.0	0.0	0.0
Layer farming sector	Layer farms	6.4%	52	5.3	4.1	6.9	17.1	816	0.3	0.0	0.0	2.5
	Pullet rearing farms	0.0%	0	0.0	0.0	0.0	0.0	169	0.0	0.0	0.0	0.0
	Parent/grandparent stock rearing farms	0.0%	0	0.0	0.0	0.0	0.0	24	0.0	0.0	0.0	0.0
	Parent/grandparent stock production farms	3.7%	2	11.5	11.5	20.3	20.3	54	0.4	0.0	0.0	0.0
Turkey farming sector	Turkey farms	0.0%	0	0.0	0.0	0.0	0.0	38	0.0	0.0	0.0	0.0
Pig farming sector	Sows/suckling piglets	30.8%	406	0.2	0.1	0.2	0.8	1.318	0.1	0.0	0.0	0.4
	Weaner pigs	27.5%	402	4.1	1.8	4.3	13.7	1.463	1.1	0.0	0.1	5.7
	Fattening pigs	3.0%	88	0.3	0.1	0.4	1.2	2.931	0.0	0.0	0.0	0.0
Veal farming sector	White veal farms	6.4%	49	0.4	0.0	0.1	3.1	765	0.0	0.0	0.0	0.0
	Rosé veal starter farms	3.1%	6	0.7	0.0	0.2	3.8	195	0.0	0.0	0.0	0.0
	Rosé veal fattening farms	1.7%	9	0.1	0.0	0.0	0.5	536	0.0	0.0	0.0	0.0
	Rosé veal combination farms	6.1%	4	0.1	0.0	0.1	0.3	66	0.0	0.0	0.0	0.0
Cattle farming sector	Dairy cattle farms	1.1%	161	0.1	0.0	0.1	0.2	14.474	0.0	0.0	0.0	0.0
	Rearing farms	0.3%	23	0.2	0.1	0.2	0.8	7.876	0.0	0.0	0.0	0.0
	Suckler cow farms	0.1%	1	0.1	0.1	0.1	0.1	713	0.0	0.0	0.0	0.0
	Beef farms	0.3%	9	0.1	0.0	0.1	0.4	2.614	0.0	0.0	0.0	0.0
Rabbit farming sector	Rabbit farms	0.0%	0	0.0	0.0	0.0	0.0	32	0.0	0.0	0.0	0.0

Veterinarians' prescription patterns

Figure A42. Boxplots of the $DDDA_{VET}$ (persistent high users are included in the calculation) per farm type for 2017 and 2022. The box includes five values, from top to bottom: the minimum, the first quartile, the median, the third quartile and the maximum. The cross represents the mean $DDDA_{VET}$.



VBI distributions of veterinarians

Table A50. 2022 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 2022 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	67	8.8	5.4	9.2	15.3
	Farms with slower growing breeds	8	71	0.9	0.0	1.5	3.2
Turkey farming sector	Turkey farms	10	9	2.6	0.0	4.8	8.0
Pig farming sector	Sows/suckling piglets	5	164	2.5	2.1	3.3	4.4
	Weaner pigs	20	164	7.9	7.5	11.6	16.0
	Fattening pigs	5	196	2.0	1.8	2.5	3.5
Veal farming sector	White veal farms	23	54	19.3	15.8	17.9	20.9
	Rosé veal starter farms	67	45	59.5	57.3	63.2	80.7
	Rosé veal fattening farms	4	91	2.4	1.3	2.9	5.8
	Rosé veal combination farms	12	25	12.7	10.4	15.1	22.5
Cattle farming sector	Dairy cattle farms	5	686	2.5	2.4	2.7	3.2
	Non-dairy cattle farms	2	686	0.6	0.4	0.7	1.2

Table A51. 2022 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	14 and 26	71	11.0	8.5	13.9	18.1
	Farms with slower growing breeds	8 and 15	71	0.9	0.0	1.5	3.2
Turkey farming sector	Turkey farms	14 and 20	10	6.0	4.8	9.5	16.7

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

Numbers of animals in the Dutch livestock sector

Table A52. Numbers of agricultural livestock (x1,000) in the Netherlands from 2009 to 2022, according to data provided by CBS (for poultry, veal calves, meat rabbits and goats) and EUROSTAT (for the other types of livestock)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Piglets (<20 kg)	4,809	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
Sows	1,100	1,098	1,106	1,081	1,095	1,106	1,053	1,022	1,066	967	1,047	926	910	888
Fattening pigs	4,099	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
Other pigs	2,100	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
Turkeys	1,060	1,036	990	827	841	794	863	762	671	556	532	585	604	576
All chickens combined	98,706	102,585	98,253	96,268	98,587	103,944	107,743	105,550	105,184	105,104	101,741	101,184	99,881	97,533
With broilers accounting for	41,914	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
Veal calves	894	928	906	908	925	921	909	956	953	1,017	1,066	1,071	1,047	1,042
All cattle combined	3,112	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
With dairy cattle accounting for	1,562	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
Goats	374	353	380	397	413	431	470	500	533	588	615	633	643	645
Sheep	1,091	1,211	1,113	1,093	1,074	1,070	1,032	1,040	1,015	743	758	708	729	724
Weaned meat rabbits	271	260	262	284	270	278	333	318	300	291	289	297	283	266
Breeding does	41	39	39	43	41	43	48	45	43	41	48	38	38	35

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

Table A53. Antibiotic use in terms of DDD_{VET}/animal-year from 2018 to 2022, by livestock sector (intramammary and intrauterine use of antibiotics not included)

Pharmaceutical group	Broiler farming sector					Turkey farming sector					Pig farming sector				
	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
1st-choice antibiotics	3.73	3.86	3.76	2.73	2.47	15.15	15.43	12.83	10.21	7.48	6.64	6.30	6.47	5.49	3.76
As a proportion of overall AB use	32.78%	34.55%	35.62%	37.15%	36.67%	60.76%	57.68%	71.14%	62.48%	63.34%	77.73%	78.89%	74.58%	72.45%	68.78%
Amphenicols	*	*	*	*	*	*	*	*	*	*	0.19	0.19	0.24	0.25	0.23
Macrolides/lincosamides	0.07	0.05	0.11	0.15	0.08	*	*	*	*	*	0.85	0.95	0.90	0.49	0.33
Penicillins	0.43	0.86	0.87	0.57	0.39	2.58	1.58	0.81	0.94	0.64	0.56	0.49	0.52	0.52	0.46
Pleuromutilins	*	*	*	*	*	0.17	0.00	*	0.13	*	0.13	0.10	0.04	0.03	0.03
Tetracyclines	1.42	1.17	1.32	0.77	0.78	11.98	13.42	11.83	8.98	6.75	3.25	2.96	3.12	2.63	1.57
Trimethoprim/sulfonamides	1.81	1.78	1.46	1.25	1.22	0.43	0.43	0.19	0.16	0.09	1.65	1.60	1.64	1.58	1.13
2nd-choice antibiotics	7.57	7.24	6.73	4.60	4.22	9.04	10.72	4.74	5.75	4.11	1.53	1.30	1.76	1.70	1.43
As a proportion of overall AB use	66.42%	64.80%	63.76%	62.60%	62.67%	36.24%	40.07%	26.30%	35.17%	34.75%	17.93%	16.25%	20.25%	22.39%	26.17%
Aminoglycosides	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.02	*	*	0.01	0.01	0.01	0.01	0.01
Aminopenicillins	5.74	5.91	5.49	3.63	3.28	7.44	8.81	3.79	3.61	2.73	0.94	0.78	1.04	0.95	0.70
1st- and 2nd-gen. cephalosporins	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Quinolones	1.64	1.16	1.12	0.88	0.83	0.13	0.11	*	0.23	0.04	0.02	0.03	0.02	0.01	0.00
Fixed-dose combinations	0.03	0.01	0.02	0.02	*	*	*	*	*	*	0.02	0.02	0.02	0.02	0.04
Long-acting macrolides	*	*	*	*	*	*	*	*	*	*	0.55	0.45	0.67	0.65	0.68
Macrolides/lincosamides	0.15	0.16	0.10	0.07	0.11	1.46	1.80	0.93	1.91	1.33	*	*	*	0.05	*
3rd-choice antibiotics	0.09	0.07	0.07	0.02	0.04	0.75	0.60	0.46	0.38	0.23	0.37	0.39	0.45	0.39	0.28
As a proportion of overall AB use	0.80%	0.65%	0.62%	0.25%	0.66%	2.99%	2.25%	2.56%	2.35%	1.91%	4.33%	4.86%	5.17%	5.16%	5.05%
3rd- and 4th-gen. cephalosporins	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Fluoroquinolones	0.06	0.04	0.03	0.01	0.02	0.75	0.59	0.46	0.38	0.23	0.00	0.00	0.00	0.00	0.00
Polymyxins	0.03	0.03	0.03	0.01	0.02	0.00	0.01	*	*	*	0.37	0.39	0.45	0.39	0.28
Overall antibiotic use	11.39	11.17	10.56	7.36	6.73	24.94	26.75	18.03	16.34	11.81	8.54	7.99	8.67	7.58	5.46

Table A53 (continued)

Pharmacotherapeutic group	Dairy cattle farming sector					Veal farming sector					Non-dairy cattle farming sector				
	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
1st-choice antibiotics	0.93	0.86	0.92	0.89	0.83	16.82	14.43	13.24	13.48	14.23	0.92	0.68	0.61	0.58	0.29
As a proportion of overall AB use	88.69%	87.11%	85.08%	83.32%	82.75%	88.07%	86.93%	86.23%	87.76%	87.72%	88.58%	86.82%	84.81%	83.32%	81.46%
Amphenicols	0.04	0.04	0.04	0.04	0.04	1.03	0.98	0.86	0.82	0.87	0.08	0.06	0.05	0.05	0.03
Macrolides/lincosamides	0.03	0.03	0.05	0.05	0.05	3.68	3.50	3.22	3.32	3.66	0.16	0.13	0.11	0.11	0.05
Penicillins	0.17	0.17	0.19	0.18	0.17	0.24	0.21	0.20	0.18	0.18	0.04	0.04	0.04	0.04	0.03
Pleuromutilins	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Tetracyclines	0.22	0.21	0.23	0.22	0.19	9.84	7.79	7.38	7.64	7.81	0.54	0.37	0.35	0.31	0.13
Trimethoprim/sulfonamides	0.48	0.41	0.42	0.41	0.38	2.03	1.94	1.58	1.52	1.72	0.10	0.09	0.07	0.07	0.04
2nd-choice antibiotics	0.11	0.12	0.15	0.17	0.17	2.24	2.15	2.09	1.84	1.96	0.11	0.10	0.11	0.11	0.06
As a proportion of overall AB use	10.59%	12.18%	14.11%	15.99%	16.64%	11.71%	12.95%	13.61%	12.01%	12.11%	10.94%	12.76%	14.60%	15.90%	18.19%
Aminoglycosides	0.01	0.01	0.01	0.01	0.01	0.08	0.07	0.06	0.07	0.12	0.00	0.00	0.00	0.00	0.00
Aminopenicillins	0.07	0.09	0.11	0.12	0.12	1.50	1.39	1.35	1.22	1.13	0.06	0.05	0.06	0.06	0.03
1st- and 2nd-gen. cephalosporins	0.00	*	*	*	*	*	*	*	*	*	0.00	*	*	*	*
Quinolones	0.00	0.00	0.00	0.00	0.00	0.47	0.52	0.55	0.43	0.56	0.02	0.02	0.02	0.02	0.01
Fixed-dose combinations	0.02	0.02	0.02	0.04	0.03	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.02	0.01
Long-acting macrolides	0.01	0.01	0.01	0.01	0.01	0.18	0.16	0.13	0.12	0.15	0.02	0.01	0.01	0.01	0.01
Macrolides/lincosamides	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
3rd-choice antibiotics	0.01	0.01	0.01	0.01	0.01	0.04	0.02	0.02	0.04	0.03	0.00	0.00	0.00	0.01	0.00
As a proportion of overall AB use	0.72%	0.71%	0.81%	0.69%	0.61%	0.22%	0.12%	0.16%	0.23%	0.17%	0.47%	0.42%	0.59%	0.78%	0.35%
3rd- and 4th-gen. cephalosporins	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	0.01	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	0.01	0.02	0.03	0.02	0.00	0.00	0.00	0.00	0.00
Overall antibiotic use	1.05	0.99	1.09	1.07	1.01	19.10	16.60	15.36	15.36	16.22	1.04	0.79	0.72	0.69	0.35

Phased implementation of the new benchmark thresholds

Table A54. The transitional benchmark thresholds for farms with sows and piglets agreed between the pig farming sector and the Ministry of Agriculture, Nature and Food Quality

Year	Signaling threshold	Action threshold
2020	7	10
2021	-	7
2022	-	5

Table A55. The transitional benchmark thresholds for farms with fattening pigs agreed between the pig farming sector and the Ministry of Agriculture, Nature and Food Quality

Year	Signaling threshold	Action threshold
2020	7	10
2021	-	7
2022	-	5

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

Year	Signaling threshold	Action threshold
2020	20	40
2021	20	30
2022	-	20

Table A57. 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 in order to determine whether it is feasible for broiler farms with conventional breeds to enter the next phase.

Table A58. 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 in order to determine whether it is feasible for broiler farms with conventional breeds to enter the next phase.

Table A59. The transitional benchmark thresholds for turkey farms agreed between the turkey farming sector and the Ministry of Agriculture, Nature and Food Quality*

Phase	Year	Signaling threshold	Action threshold
1	2021-2022	14	20
2	2023-2024	12	16
3	2025-2026	10	12
4	2027-	-	10

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

Table A60. 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 A61. Livestock sectors' progress towards their government-defined reduction targets. The reduction targets were introduced in order 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)				
		2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
Broiler farming sector	Broiler farms	-15.9%	11.4%	-13.6%	-75.0%	-56.8%	-14.1%	15.9%	-9.8%	-73.5%	-53.3%
Turkey farming sector	Turkey farms	0.0%	-44.4%	-88.9%	-77.8%	-66.7%	18.4%	-41.9%	-88.4%	-74.4%	-60.5%
Pig farming sector	Sows/suckling piglets	-3.7%	-24.3%	-36.0%	-57.4%	-70.6%	0.3%	-15.4%	-24.6%	-47.2%	-58.6%
	Weaner pigs	-10.3%	-25.3%	-24.1%	-45.0%	-64.1%	-5.9%	-17.0%	-12.1%	-32.8%	-50.0%
	Fattening pigs	-2.3%	-5.7%	-34.9%	-68.1%	-82.9%	3.5%	7.8%	-18.3%	-53.5%	-73.3%
Veal farming sector	White veal farms	-52.9%	-61.8%	-70.6%	-76.5%	-82.4%	-53.9%	-61.1%	-69.7%	-75.3%	-80.7%
	Rosé veal starter farms	-2.9%	-52.9%	-85.3%	-67.6%	-67.6%	-9.8%	-46.7%	-82.2%	-58.4%	-59.5%
	Rosé veal fattening farms	-5.5%	142.5%	115.1%	94.5%	108.2%	-8.8%	92.1%	83.4%	94.9%	125.3%

* 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 A62. 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 A63. 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 sector²	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 sector²	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 sector²	Toms		n/a
	Hens		n/a
Cattle farming sector³	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

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 2: 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 to the report

Usage of Antibiotics in Agricultural Livestock in the Netherlands in 2022

Trends and benchmarking of livestock farms and veterinarians

SDa/1160/2023

The Netherlands Veterinary Medicines Institute, 2023

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