

# Appendix to the report

## Usage of Antibiotics in Agricultural Livestock in the Netherlands in 2020

Trends and benchmarking of livestock farms and  
veterinarians



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## DDDA<sub>NAT</sub> summary

Table A1. DDDA<sub>NAT</sub> values for the 2015-2020 period, by livestock sector and pharmacotherapeutic group

| Pharmacotherapeutic group                | Broiler farming sector |              |              |              |              | Turkey farming sector |              |              |              |              | Pig farming sector |              |              |              |              |
|--|------------------------|--------------|--------------|--------------|--------------|-----------------------|--------------|--------------|--------------|--------------|--------------------|--------------|--------------|--------------|--------------|
|  | 2016                   | 2017         | 2018         | 2019         | 2020         | 2016                  | 2017         | 2018         | 2019         | 2020         | 2016               | 2017         | 2018         | 2019         | 2020         |
| <b>1st-choice antibiotics</b>            | <b>2.53</b>            | <b>2.39</b>  | <b>2.28</b>  | <b>2.57</b>  | <b>2.55</b>  | <b>12.29</b>          | <b>8.11</b>  | <b>10.82</b> | <b>10.66</b> | <b>8.32</b>  | <b>6.88</b>        | <b>6.61</b>  | <b>6.70</b>  | <b>6.26</b>  | <b>6.46</b>  |
| <b>As a proportion of overall AB use</b> | <b>24.9%</b>           | <b>25.4%</b> | <b>22.6%</b> | <b>26.0%</b> | <b>27.5%</b> | <b>46.5%</b>          | <b>40.2%</b> | <b>52.5%</b> | <b>47.9%</b> | <b>61.1%</b> | <b>77.5%</b>       | <b>76.0%</b> | <b>77.2%</b> | <b>78.7%</b> | <b>73.7%</b> |
| Amphenicols                              | *                      | *            | *            | *            | *            | *                     | *            | *            | *            | *            | 0.24               | 0.25         | 0.25         | 0.26         | 0.32         |
| Macrolides/lincosamides                  | 0.04                   | 0.04         | 0.03         | 0.02         | 0.05         | *                     | *            | *            | *            | *            | 0.82               | 0.76         | 0.77         | 0.84         | 0.80         |
| Other                                    | *                      | *            | *            | *            | *            | *                     | *            | *            | *            | *            | *                  | *            | *            | *            | *            |
| Penicillins                              | 0.70                   | 0.59         | 0.44         | 0.87         | 0.88         | 3.70                  | 1.64         | 2.62         | 1.61         | 0.82         | 0.58               | 0.55         | 0.68         | 0.51         | 0.53         |
| Pleuromutilins                           | *                      | *            | *            | *            | *            | *                     | 0.10         | 0.12         | *            | *            | 0.07               | 0.09         | 0.12         | 0.09         | 0.04         |
| Tetracyclines                            | 1.01                   | 0.95         | 1.04         | 0.90         | 1.00         | 7.63                  | 5.51         | 7.15         | 8.13         | 7.10         | 4.07               | 4.05         | 3.86         | 3.54         | 3.77         |
| Trimethoprim/sulfonamides                | 0.78                   | 0.82         | 0.78         | 0.78         | 0.62         | 0.95                  | 0.86         | 0.93         | 0.93         | 0.40         | 1.10               | 0.90         | 1.01         | 1.01         | 1.00         |
| <b>2nd-choice antibiotics</b>            | <b>7.55</b>            | <b>6.96</b>  | <b>7.74</b>  | <b>7.24</b>  | <b>6.63</b>  | <b>11.93</b>          | <b>10.99</b> | <b>9.06</b>  | <b>10.99</b> | <b>4.83</b>  | <b>1.71</b>        | <b>1.83</b>  | <b>1.67</b>  | <b>1.36</b>  | <b>1.92</b>  |
| <b>As a proportion of overall AB use</b> | <b>74.1%</b>           | <b>73.7%</b> | <b>76.4%</b> | <b>73.1%</b> | <b>71.6%</b> | <b>45.1%</b>          | <b>54.5%</b> | <b>43.9%</b> | <b>49.4%</b> | <b>35.5%</b> | <b>19.3%</b>       | <b>21.1%</b> | <b>19.3%</b> | <b>17.1%</b> | <b>21.9%</b> |
| Aminoglycosides                          | 0.01                   | 0.03         | 0.02         | 0.01         | 0.00         | 0.69                  | 0.05         | 0.00         | *            | 0.00         | 0.00               | 0.01         | 0.03         | 0.03         | 0.02         |
| Aminopenicillins                         | 5.78                   | 5.00         | 5.19         | 5.37         | 4.90         | 10.05                 | 9.37         | 7.52         | 9.16         | 3.97         | 1.39               | 1.41         | 1.24         | 0.97         | 1.41         |
| 1st- and 2nd-gen. cephalosporins         | *                      | *            | *            | *            | *            | *                     | *            | *            | *            | *            | *                  | *            | *            | *            | *            |
| Quinolones                               | 1.51                   | 1.72         | 2.29         | 1.62         | 1.57         | 0.01                  | 0.26         | 0.18         | 0.16         | *            | 0.02               | 0.03         | 0.02         | 0.04         | 0.03         |
| Fixed-dose combinations                  | 0.05                   | 0.01         | 0.02         | 0.01         | 0.01         | *                     | *            | *            | 0.01         | *            | 0.03               | 0.02         | 0.02         | 0.02         | 0.02         |
| Long-acting macrolides                   | *                      | *            | *            | *            | *            | *                     | *            | *            | *            | *            | 0.26               | 0.37         | 0.37         | 0.30         | 0.45         |
| Macrolides/lincosamides                  | 0.21                   | 0.20         | 0.22         | 0.24         | 0.15         | 1.18                  | 1.30         | 1.35         | 1.66         | 0.86         | *                  | *            | *            | *            | *            |
| <b>3rd-choice antibiotics</b>            | <b>0.11</b>            | <b>0.08</b>  | <b>0.10</b>  | <b>0.09</b>  | <b>0.08</b>  | <b>2.21</b>           | <b>1.06</b>  | <b>0.75</b>  | <b>0.61</b>  | <b>0.46</b>  | <b>0.28</b>        | <b>0.26</b>  | <b>0.31</b>  | <b>0.34</b>  | <b>0.39</b>  |
| <b>As a proportion of overall AB use</b> | <b>1.1%</b>            | <b>0.9%</b>  | <b>1.0%</b>  | <b>0.9%</b>  | <b>0.9%</b>  | <b>8.4%</b>           | <b>5.3%</b>  | <b>3.6%</b>  | <b>2.7%</b>  | <b>3.4%</b>  | <b>3.2%</b>        | <b>2.9%</b>  | <b>3.6%</b>  | <b>4.3%</b>  | <b>4.5%</b>  |
| 3rd- and 4th-gen. cephalosporins         | *                      | *            | *            | *            | *            | *                     | *            | *            | *            | *            | *                  | *            | *            | *            | *            |
| Fluoroquinolones                         | 0.07                   | 0.05         | 0.06         | 0.04         | 0.03         | 1.60                  | 1.06         | 0.75         | 0.59         | 0.46         | 0.00               | 0.00         | 0.00         | 0.00         | 0.00         |
| Polymyxins                               | 0.04                   | 0.03         | 0.04         | 0.05         | 0.05         | 0.61                  | *            | *            | 0.02         | *            | 0.28               | 0.26         | 0.31         | 0.34         | 0.39         |
| <b>Overall antibiotic use</b>            | <b>10.19</b>           | <b>9.44</b>  | <b>10.13</b> | <b>9.90</b>  | <b>9.26</b>  | <b>26.42</b>          | <b>20.16</b> | <b>20.62</b> | <b>22.25</b> | <b>13.62</b> | <b>8.87</b>        | <b>8.70</b>  | <b>8.68</b>  | <b>7.96</b>  | <b>8.77</b>  |

0.00 means use was below 0.005 DDDANAT; \* means no use was reported

Table A1. (continued)

| Pharmacotherapeutic group                | Dairy cattle farming sector |              |              |              |              | Veal farming sector |              |              |              |              | Non-dairy cattle farming sector |              |              |              |              |
|--|-----------------------------|--------------|--------------|--------------|--------------|---------------------|--------------|--------------|--------------|--------------|---------------------------------|--------------|--------------|--------------|--------------|
|  | 2016                        | 2017         | 2018         | 2019         | 2020         | 2016                | 2017         | 2018         | 2019         | 2020         | 2016                            | 2017         | 2018         | 2019         | 2020         |
| <b>1st-choice antibiotics</b>            | <b>2.23</b>                 | <b>2.35</b>  | <b>2.40</b>  | <b>2.39</b>  | <b>2.66</b>  | <b>17.94</b>        | <b>17.30</b> | <b>16.09</b> | <b>14.15</b> | <b>13.02</b> | <b>0.91</b>                     | <b>0.92</b>  | <b>0.94</b>  | <b>0.71</b>  | <b>0.65</b>  |
| <b>As a proportion of overall AB use</b> | <b>74.0%</b>                | <b>76.9%</b> | <b>79.0%</b> | <b>79.9%</b> | <b>80.5%</b> | <b>85.9%</b>        | <b>85.9%</b> | <b>86.4%</b> | <b>85.6%</b> | <b>85.1%</b> | <b>85.0%</b>                    | <b>84.2%</b> | <b>86.7%</b> | <b>85.5%</b> | <b>83.7%</b> |
| Amphenicols                              | 0.06                        | 0.05         | 0.05         | 0.05         | 0.05         | 1.59                | 1.44         | 1.33         | 1.28         | 1.12         | 0.11                            | 0.11         | 0.10         | 0.08         | 0.07         |
| Macrolides/lincosamides                  | 0.06                        | 0.05         | 0.05         | 0.06         | 0.08         | 3.35                | 3.43         | 3.21         | 3.05         | 2.76         | 0.15                            | 0.16         | 0.14         | 0.11         | 0.10         |
| Other                                    | *                           | *            | *            | *            | *            | *                   | *            | *            | *            | *            | *                               | *            | 0.00         | 0.00         | 0.00         |
| Penicillins                              | 1.52                        | 1.69         | 1.76         | 1.75         | 1.96         | 0.48                | 0.46         | 0.43         | 0.39         | 0.36         | 0.10                            | 0.11         | 0.10         | 0.09         | 0.09         |
| Pleuromutilins                           | *                           | *            | *            | *            | *            | *                   | *            | *            | *            | *            | *                               | *            | 0.00         | 0.00         | 0.00         |
| Tetracyclines                            | 0.35                        | 0.32         | 0.32         | 0.30         | 0.32         | 10.47               | 10.35        | 9.86         | 8.23         | 7.80         | 0.44                            | 0.45         | 0.53         | 0.38         | 0.35         |
| Trimethoprim/sulfonamides                | 0.24                        | 0.24         | 0.23         | 0.24         | 0.26         | 2.05                | 1.61         | 1.25         | 1.21         | 0.98         | 0.10                            | 0.09         | 0.06         | 0.05         | 0.04         |
| <b>2nd-choice antibiotics</b>            | <b>0.77</b>                 | <b>0.70</b>  | <b>0.63</b>  | <b>0.59</b>  | <b>0.64</b>  | <b>2.85</b>         | <b>2.78</b>  | <b>2.50</b>  | <b>2.35</b>  | <b>2.26</b>  | <b>0.16</b>                     | <b>0.17</b>  | <b>0.14</b>  | <b>0.12</b>  | <b>0.12</b>  |
| <b>As a proportion of overall AB use</b> | <b>25.7%</b>                | <b>22.8%</b> | <b>20.8%</b> | <b>19.9%</b> | <b>19.3%</b> | <b>13.7%</b>        | <b>13.8%</b> | <b>13.4%</b> | <b>14.2%</b> | <b>14.8%</b> | <b>14.6%</b>                    | <b>15.6%</b> | <b>12.9%</b> | <b>14.2%</b> | <b>15.8%</b> |
| Aminoglycosides                          | 0.01                        | 0.01         | 0.01         | 0.01         | 0.01         | 0.23                | 0.23         | 0.20         | 0.16         | 0.12         | 0.01                            | 0.01         | 0.01         | 0.00         | 0.00         |
| Aminopenicillins                         | 0.34                        | 0.31         | 0.29         | 0.28         | 0.28         | 1.77                | 1.75         | 1.65         | 1.52         | 1.48         | 0.06                            | 0.08         | 0.06         | 0.06         | 0.06         |
| 1st- and 2nd-gen. cephalosporins         | 0.03                        | 0.03         | 0.03         | 0.03         | 0.02         | *                   | *            | *            | *            | *            | 0.00                            | 0.00         | 0.00         | 0.00         | 0.00         |
| Quinolones                               | 0.00                        | 0.00         | 0.00         | 0.00         | 0.00         | 0.66                | 0.57         | 0.36         | 0.41         | 0.43         | 0.03                            | 0.02         | 0.01         | 0.01         | 0.02         |
| Fixed-dose combinations                  | 0.38                        | 0.34         | 0.29         | 0.27         | 0.31         | 0.00                | 0.01         | 0.00         | 0.00         | 0.00         | 0.03                            | 0.04         | 0.03         | 0.02         | 0.02         |
| Long-acting macrolides                   | 0.01                        | 0.01         | 0.01         | 0.01         | 0.01         | 0.19                | 0.23         | 0.28         | 0.26         | 0.23         | 0.02                            | 0.02         | 0.03         | 0.02         | 0.02         |
| Macrolides/lincosamides                  | *                           | *            | *            | *            | *            | *                   | *            | *            | *            | *            | *                               | *            | *            | *            | *            |
| <b>3rd-choice antibiotics</b>            | <b>0.01</b>                 | <b>0.01</b>  | <b>0.01</b>  | <b>0.01</b>  | <b>0.01</b>  | <b>0.09</b>         | <b>0.06</b>  | <b>0.04</b>  | <b>0.02</b>  | <b>0.02</b>  | <b>0.00</b>                     | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>  |
| <b>As a proportion of overall AB use</b> | <b>0.3%</b>                 | <b>0.2%</b>  | <b>0.2%</b>  | <b>0.2%</b>  | <b>0.2%</b>  | <b>0.4%</b>         | <b>0.3%</b>  | <b>0.2%</b>  | <b>0.1%</b>  | <b>0.1%</b>  | <b>0.4%</b>                     | <b>0.2%</b>  | <b>0.4%</b>  | <b>0.3%</b>  | <b>0.5%</b>  |
| 3rd- and 4th-gen. cephalosporins         | 0.00                        | 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         | 0.03                | 0.04         | 0.02         | 0.01         | 0.01         | 0.00                            | 0.00         | 0.00         | 0.00         | 0.00         |
| Polymyxins                               | 0.01                        | 0.00         | 0.00         | 0.00         | 0.00         | 0.07                | 0.02         | 0.02         | 0.01         | 0.02         | 0.00                            | 0.00         | 0.00         | 0.00         | 0.00         |
| <b>Overall antibiotic use</b>            | <b>3.01</b>                 | <b>3.06</b>  | <b>3.04</b>  | <b>2.99</b>  | <b>3.31</b>  | <b>20.88</b>        | <b>20.13</b> | <b>18.63</b> | <b>16.52</b> | <b>15.31</b> | <b>1.07</b>                     | <b>1.10</b>  | <b>1.08</b>  | <b>0.83</b>  | <b>0.78</b>  |

0.00 means use was below 0.005 DDDANAT; \* means no use was reported

Table A1. (continued)

| Pharmacotherapeutic group                | Rabbit farming sector |              |              |              |              |
|--|-----------------------|--------------|--------------|--------------|--------------|
|  | 2016                  | 2017         | 2018         | 2019         | 2020         |
| <b>1st-choice antibiotics</b>            | <b>30.92</b>          | <b>24.22</b> | <b>32.65</b> | <b>30.44</b> | <b>35.27</b> |
| <b>As a proportion of overall AB use</b> | <b>75.5%</b>          | <b>80.6%</b> | <b>74.8%</b> | <b>77.1%</b> | <b>83.3%</b> |
| Amphenicols                              | 0.00                  | *            | *            | *            | *            |
| Macrolides/lincosamides                  | 1.07                  | 1.74         | 2.67         | 5.15         | 3.93         |
| Other                                    | 16.37                 | 12.36        | 16.55        | 13.25        | 12.54        |
| Penicillins                              | *                     | *            | 0.00         | *            | *            |
| Pleuromutilins                           | 1.38                  | 1.68         | 3.37         | 4.02         | 3.86         |
| Tetracyclines                            | 10.49                 | 7.76         | 9.93         | 7.13         | 11.22        |
| Trimethoprim/sulfonamides                | 1.62                  | 0.69         | 0.13         | 0.89         | 3.73         |
| <b>2nd-choice antibiotics</b>            | <b>9.67</b>           | <b>5.73</b>  | <b>10.46</b> | <b>8.39</b>  | <b>7.09</b>  |
| <b>As a proportion of overall AB use</b> | <b>23.6%</b>          | <b>19.0%</b> | <b>24.0%</b> | <b>21.2%</b> | <b>16.7%</b> |
| Aminoglycosides                          | 9.66                  | 5.73         | 10.22        | 8.33         | 6.97         |
| Aminopenicillins                         | *                     | *            | *            | *            | *            |
| 1st- and 2nd-gen. cephalosporins         | *                     | *            | *            | *            | *            |
| Quinolones                               | *                     | *            | *            | *            | 0.12         |
| Fixed-dose combinations                  | *                     | *            | *            | *            | *            |
| Long-acting macrolides                   | 0.01                  | *            | 0.24         | 0.05         | *            |
| Macrolides/lincosamides                  | *                     | *            | *            | *            | *            |
| <b>3rd-choice antibiotics</b>            | <b>0.34</b>           | <b>0.12</b>  | <b>0.57</b>  | <b>0.68</b>  | <b>0.00</b>  |
| <b>As a proportion of overall AB use</b> | <b>0.8%</b>           | <b>0.4%</b>  | <b>1.3%</b>  | <b>1.7%</b>  | <b>0.0%</b>  |
| 3rd- and 4th-gen. cephalosporins         | *                     | *            | *            | *            | *            |
| Fluoroquinolones                         | 0.25                  | 0.12         | 0.29         | 0.11         | *            |
| Polymyxins                               | 0.09                  | *            | 0.28         | 0.57         | *            |
| <b>Overall antibiotic use</b>            | <b>40.93</b>          | <b>30.07</b> | <b>43.68</b> | <b>39.51</b> | <b>42.35</b> |

0.00 means use was below 0.005 DDDANAT; \*means no use was reported

Table A2. Reductions in the amount of antibiotics used in agricultural livestock, compared to 2009 levels

| Livestock sector            | DDDA <sub>NAT</sub> 2009 | Reduction from the 2009 level, in % |      |      |      |      |      |      |      |      |      |      | DDDA <sub>NAT</sub> 2020 |
|-----------------------------|--------------------------|-------------------------------------|------|------|------|------|------|------|------|------|------|------|--------------------------|
|                             |                          | 2010                                | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |                          |
| Broiler farming sector      | 36.76                    | 37                                  | 43   | 52   | 65   | 57   | 60   | 72   | 74   | 72   | 73   | 75   | 9.26                     |
| Pig farming sector          | 20.51                    | 26                                  | 29   | 30   | 51   | 54   | 56   | 57   | 58   | 58   | 61   | 57   | 8.77                     |
| Dairy cattle farming sector | 5.78                     | -10                                 | -1   | 30   | 30   | 43   | 46   | 48   | 47   | 47   | 48   | 43   | 3.31                     |
| Veal farming sector*        | 33.80                    | 9                                   | 14   | 24   | 36   | 37   | 35   | 38   | 40   | 45   | 51   | 55   | 15.31                    |

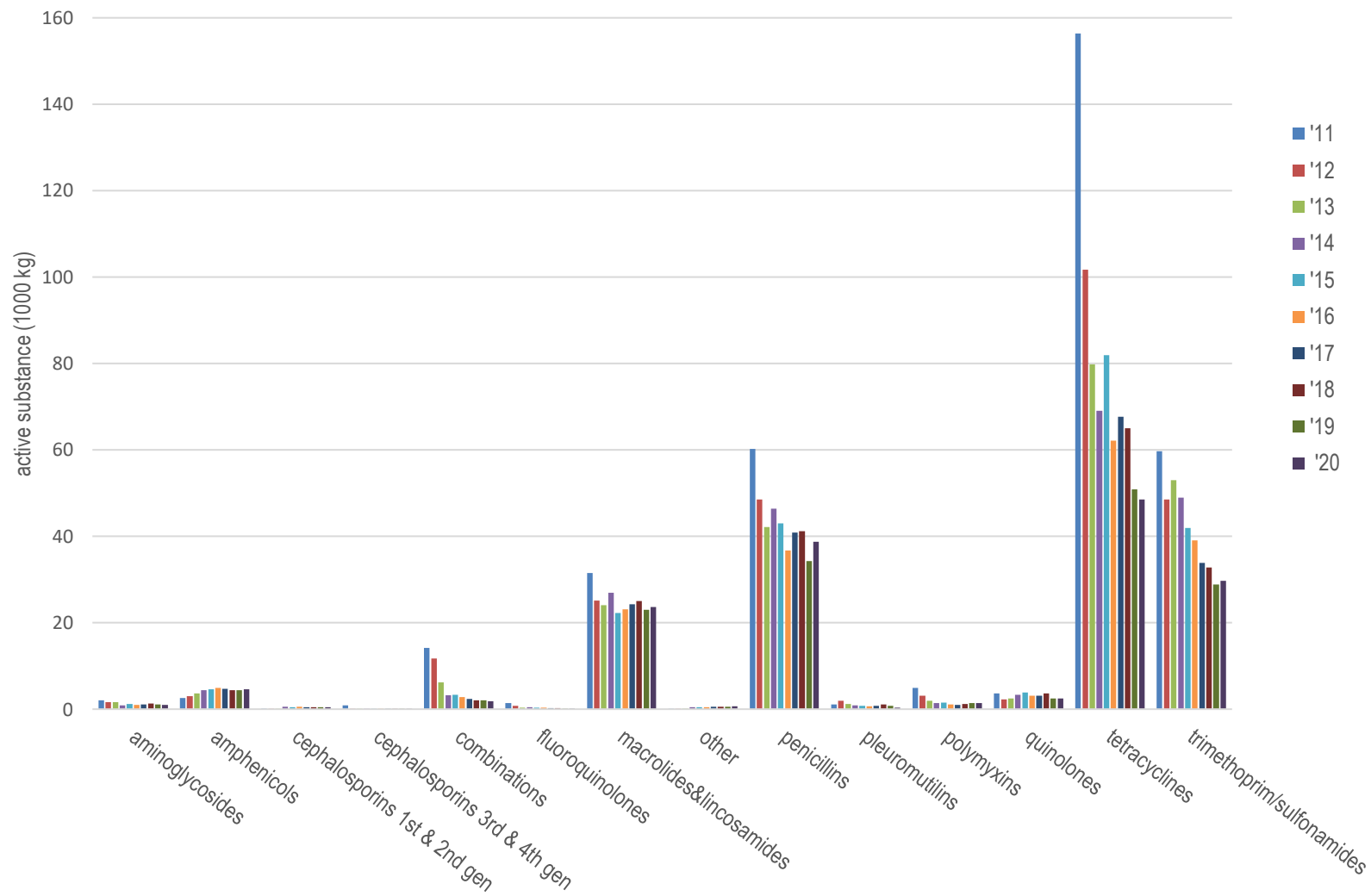
\* reduction compared to 2007 is 61%

## Mass balance

Table A3. Kilograms of antibiotics used (by livestock sector and for all livestock sectors combined) and sold in 2020, by pharmacotherapeutic group

| Pharmacotherapeutic group                      | Kilograms used, according to delivery records |                       |                                  |                    |                             |                     |                                 |                       |                                | Kilograms sold |
|--|---|-----------------------|----------------------------------|--------------------|-----------------------------|---------------------|---------------------------------|-----------------------|--------------------------------|----------------|
|  | Broiler farming sector                        | Turkey farming sector | Other poultry farming subsectors | Pig farming sector | Dairy cattle farming sector | Veal farming sector | Non-dairy cattle farming sector | Rabbit farming sector | All livestock sectors combined |                |
| <b>1st-choice antibiotics</b>                  | <b>3,580</b>                                  | <b>947</b>            | <b>2,601</b>                     | <b>52,026</b>      | <b>10,185</b>               | <b>37,014</b>       | <b>5,092</b>                    | <b>503</b>            | <b>111,947</b>                 | <b>118,429</b> |
| <b>As a proportion of overall AB use/sales</b> | <b>41.0%</b>                                  | <b>80.4%</b>          | <b>83.9%</b>                     | <b>79.9%</b>       | <b>82.2%</b>                | <b>81.5%</b>        | <b>83.0%</b>                    | <b>81.4%</b>          | <b>78.4%</b>                   | <b>77.1%</b>   |
| Amphenicols                                    | 0   | 0                     | 0                                | 1,575              | 488                         | 2,063               | 389                             | 0                     | 4,515                          | 4,603          |
| Fixed-dose combinations                        | 0   | 0                     | 0                                | 0                  | 0                           | 0                   | 0                               | 0                     | 0                              | 325            |
| Macrolides/lincosamides                        | 437   | 236                   | 1,183                            | 7,201              | 540                         | 12,562              | 1,279                           | 31                    | 23,469                         | 23,537         |
| Other  | 0   | 0                     | 0                                | 0                  | 0                           | 0                   | 0                               | 61                    | 61                             | 630            |
| Penicillins                                    | 728   | 48                    | 595                              | 4,412              | 3,523                       | 471                 | 290                             | 0                     | 10,0n 67                       | 10,741         |
| Pleuromutilins                                 | 0   | 0                     | 33                               | 262                | 0                           | 0                   | 0                               | 53                    | 348                            | 379            |
| Tetracyclines                                  | 977   | 623                   | 573                              | 24,876             | 1,718                       | 16,937              | 2,616                           | 121                   | 48,441                         | 48,515         |
| Trimethoprim/sulfonamides                      | 1,438   | 39                    | 217                              | 13,701             | 3,917                       | 4,980               | 517                             | 237                   | 25,046                         | 29,699         |
| <b>2nd-choice antibiotics</b>                  | <b>5,136</b>                                  | <b>214</b>            | <b>268</b>                       | <b>11,940</b>      | <b>2,178</b>                | <b>8,388</b>        | <b>1,034</b>                    | <b>115</b>            | <b>29,274</b>                  | <b>33,539</b>  |
| <b>As a proportion of overall AB use/sales</b> | <b>58.8%</b>                                  | <b>18.2%</b>          | <b>8.6%</b>                      | <b>18.3%</b>       | <b>17.6%</b>                | <b>18.5%</b>        | <b>16.9%</b>                    | <b>18.6%</b>          | <b>20.5%</b>                   | <b>21.8%</b>   |
| Aminoglycosides                                | 10  | 1                     | 0                                | 97                 | 233                         | 204                 | 26                              | 113                   | 685                            | 1,006          |
| Aminopenicillins                               | 4,329   | 213                   | 172                              | 11,030             | 1,297                       | 6,740               | 709                             | 0                     | 24,490                         | 27,955         |
| 1st- and 2nd-gen. cephalosporins               | 0   | 0                     | 0                                | 0                  | 16                          | 0                   | 0                               | 0                     | 17                             | 432            |
| Quinolones                                     | 774   | 0                     | 96                               | 212                | 5                           | 1,423               | 169                             | 1                     | 2,680                          | 2,494          |
| Fixed-dose combinations                        | 23  | 0                     | 0                                | 498                | 623                         | 5                   | 125                             | 0                     | 1,274                          | 1,520          |
| Macrolides/lincosamides                        | 0   | 0                     | 0                                | 104                | 5                           | 16                  | 5                               | 0                     | 129                            | 132            |
| <b>3rd-choice antibiotics</b>                  | <b>24</b>                                     | <b>16</b>             | <b>230</b>                       | <b>1,176</b>       | <b>23</b>                   | <b>19</b>           | <b>9</b>                        | <b>0</b>              | <b>1,497</b>                   | <b>1,553</b>   |
| <b>As a proportion of overall AB use/sales</b> | <b>0.3%</b>                                   | <b>1.4%</b>           | <b>7.4%</b>                      | <b>1.8%</b>        | <b>0.2%</b>                 | <b>0.0%</b>         | <b>0.1%</b>                     | <b>0.0%</b>           | <b>1.0%</b>                    | <b>1.0%</b>    |
| 3rd- and 4th-gen. cephalosporins               | 0   | 0                     | 0                                | 0                  | 0                           | 0                   | 0                               | 0                     | 0                              | 0,6            |
| Fluoroquinolones                               | 15  | 16                    | 15                               | 1                  | 18                          | 6                   | 1                               | 0                     | 71                             | 149            |
| Polymyxins                                     | 9   | 0                     | 215                              | 1,175              | 5                           | 13                  | 8                               | 0                     | 1,425                          | 1,404          |
| <b>Overall</b>                                 | <b>8,740</b>                                  | <b>1,177</b>          | <b>3,099</b>                     | <b>65,143</b>      | <b>12,387</b>               | <b>45,421</b>       | <b>6,135</b>                    | <b>617</b>            | <b>142,718</b>                 | <b>153,521</b> |

Figure A1. Kilograms of antibiotics sold for the 2011-2020 period, by pharmacotherapeutic group



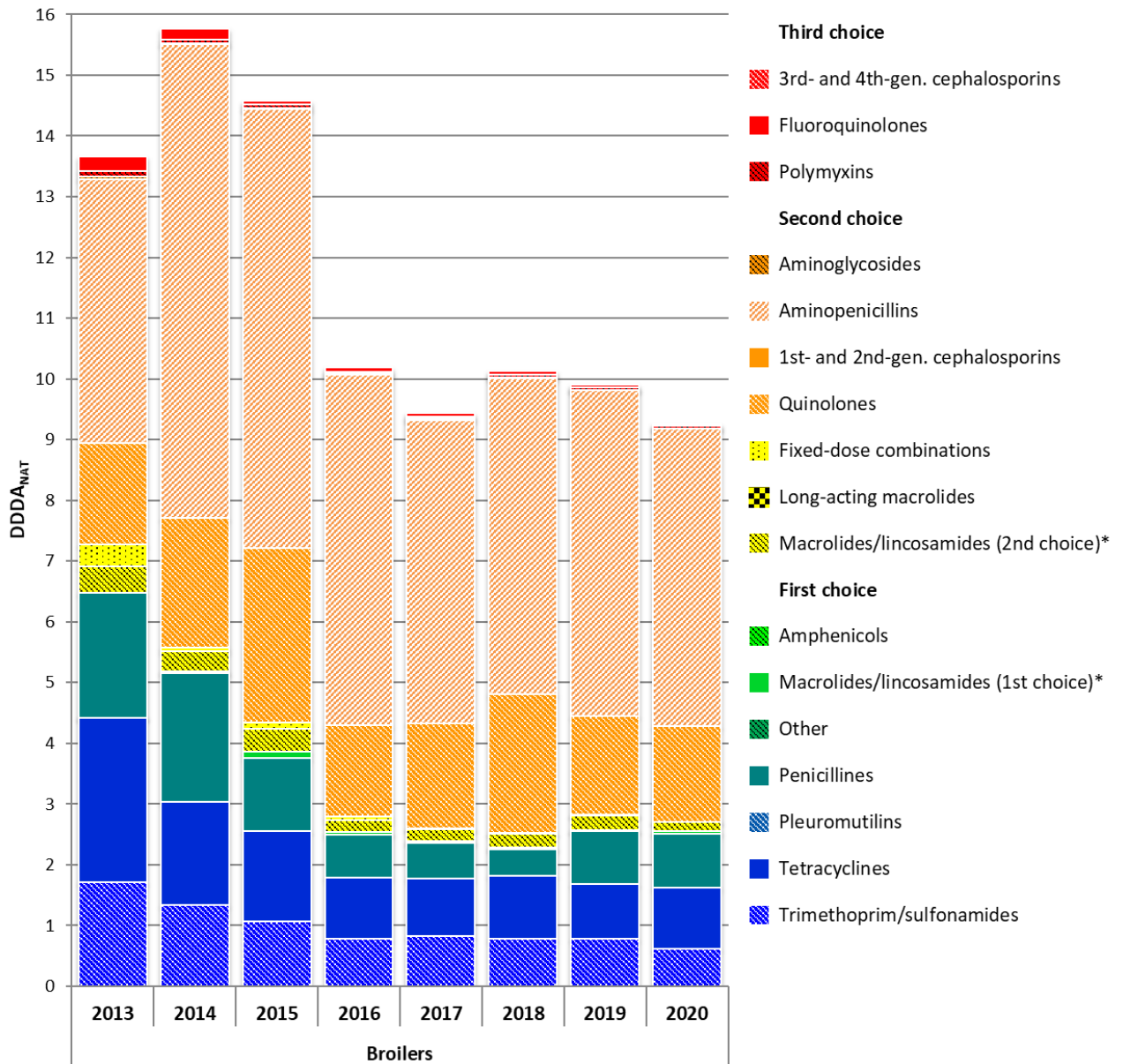


## Detailed antibiotic usage data by livestock sector

### Broiler farming sector

#### 1. Antibiotic use in DDDA<sub>NAT</sub>

Figure A2. DDDA<sub>NAT</sub> trends in the broiler farming sector over the 2013-2020 period, by pharmacotherapeutic group



\* In the poultry farming sector, all macrolides/lincosamides (with the exception of lincomycin and spiramycin) are categorized as second-choice antibiotics. In other livestock sectors, only long-acting macrolides are categorized as second-choice antibiotics.

## 2. DDDA<sub>F</sub>

### 2.1 All broiler farms combined

Number of farms: 816\*

Number of farms with DDDA<sub>F</sub>=0: 338 (41.4%)

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

Number of farms that used fluoroquinolones: 19 (2.3%)

Number of farms that used polymyxins: 8 (1.0%)

Table A4. Antibiotic use in DDDA<sub>F</sub> at broiler farms from 2016 to 2020\*\*\*

| Year | N   | Mean | Median | P75  | P90  |
|------|-----|------|--------|------|------|
| 2016 | 853 | 10.1 | 5.2    | 14.6 | 27.2 |
| 2017 | 852 | 10.3 | 4.4    | 14.4 | 27.1 |
| 2018 | 834 | 10.6 | 5.1    | 14.5 | 26.7 |
| 2019 | 819 | 8.6  | 3.4    | 13.6 | 24.0 |
| 2020 | 816 | 7.8  | 2.6    | 10.9 | 24.2 |

\* This number also contains farms with conventional and alternative breeds, therefore the number of farms in both separate categories does not add up to the total number of farms in the sector mentioned here.

\*\* These antibiotics are not allowed for poultry.

\*\*\* Only years for which similar DDDA<sub>F</sub> calculation methods were used have been included.

Figure B3. 2016, 2019 and 2020 DDDA<sub>F</sub> distributions for broiler farms

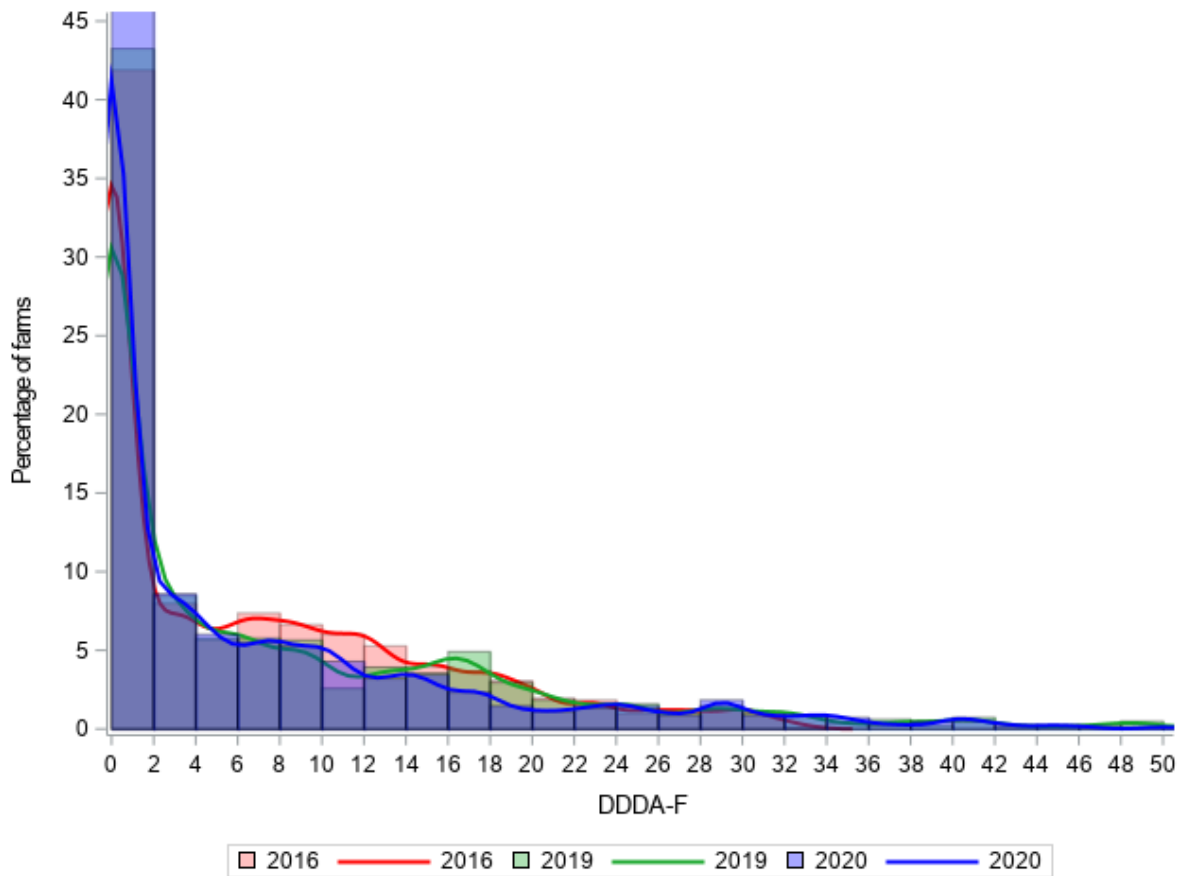


Table A5. Antibiotic use in DDDA<sub>F</sub> at broiler farms in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |      |      |
|--------|---------------------------|-------------------------|--------------------------------------|-------------------|------|------|
|        |                           |                         |                                      | Median            | P75  | Mean |
| 1      | Macrolides/lincosamides   | Oral                    | 793                                  | 0.00              | 0.00 | 0.16 |
| 1      | Penicillins               | Oral                    | 717                                  | 0.00              | 0.00 | 0.63 |
| 1      | Tetracyclines             | Oral                    | 627                                  | 0.00              | 0.00 | 1.01 |
| 1      | Trimethoprim/sulfonamides | Oral                    | 513                                  | 0.00              | 2.66 | 2.32 |
| 2      | Aminoglycosides           | Oral                    | 814                                  | 0.00              | 0.00 | 0.00 |
| 2      | Aminopenicillins          | Oral                    | 531                                  | 0.00              | 3.19 | 2.48 |
| 2      | Quinolones                | Oral                    | 640                                  | 0.00              | 0.00 | 0.83 |
| 2      | Fixed-dose combinations   | Oral                    | 810                                  | 0.00              | 0.00 | 0.03 |
| 2      | Macrolides/lincosamides   | Oral                    | 763                                  | 0.00              | 0.00 | 0.10 |
| 2      | Penicillins               | Oral                    | 808                                  | 0.00              | 0.00 | 0.11 |
| 3      | Fluoroquinolones          | Oral                    | 797                                  | 0.00              | 0.00 | 0.10 |
| 3      | Polymyxins                | Oral                    | 808                                  | 0.00              | 0.00 | 0.02 |

**2.2 Broiler farms with conventional breeds**

Number of farms: 394

Number of farms with  $DDDA_F=0$ : 85 (21.6%)

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

Number of farms that used fluoroquinolones: 16 (4.1%)

Number of farms that used polymyxins: 7 (1.8%)

Table A6. Antibiotic use in  $DDDA_F$  at broiler farms with conventional breeds from 2016 to 2020\*\*

| 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 |

\* These antibiotics are not allowed for poultry.

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

Figure B4. 2018, 2019 and 2020  $DDDA_F$  distributions for broiler farms with conventional breeds

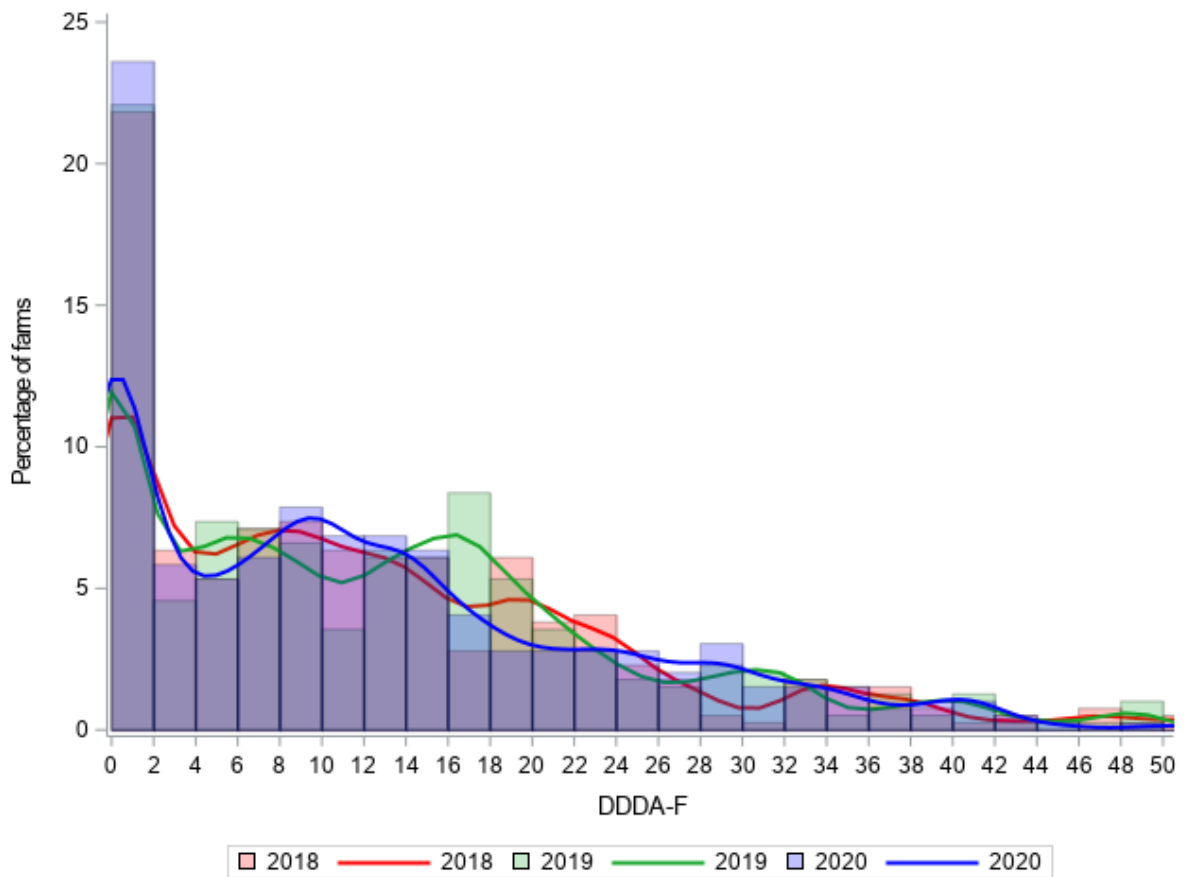


Figure B5. A4. Scatter plot of 2019 and 2020 DDDA<sub>F</sub> values for broiler farms with conventional breeds. The red solid lines represent the action thresholds defined by the SDa. The red dotted line represents the transitional action threshold negotiated by the livestock sector. For each type of action threshold, the number of farms with persistently high usage levels is listed in the upper-right corner of the scatter plot

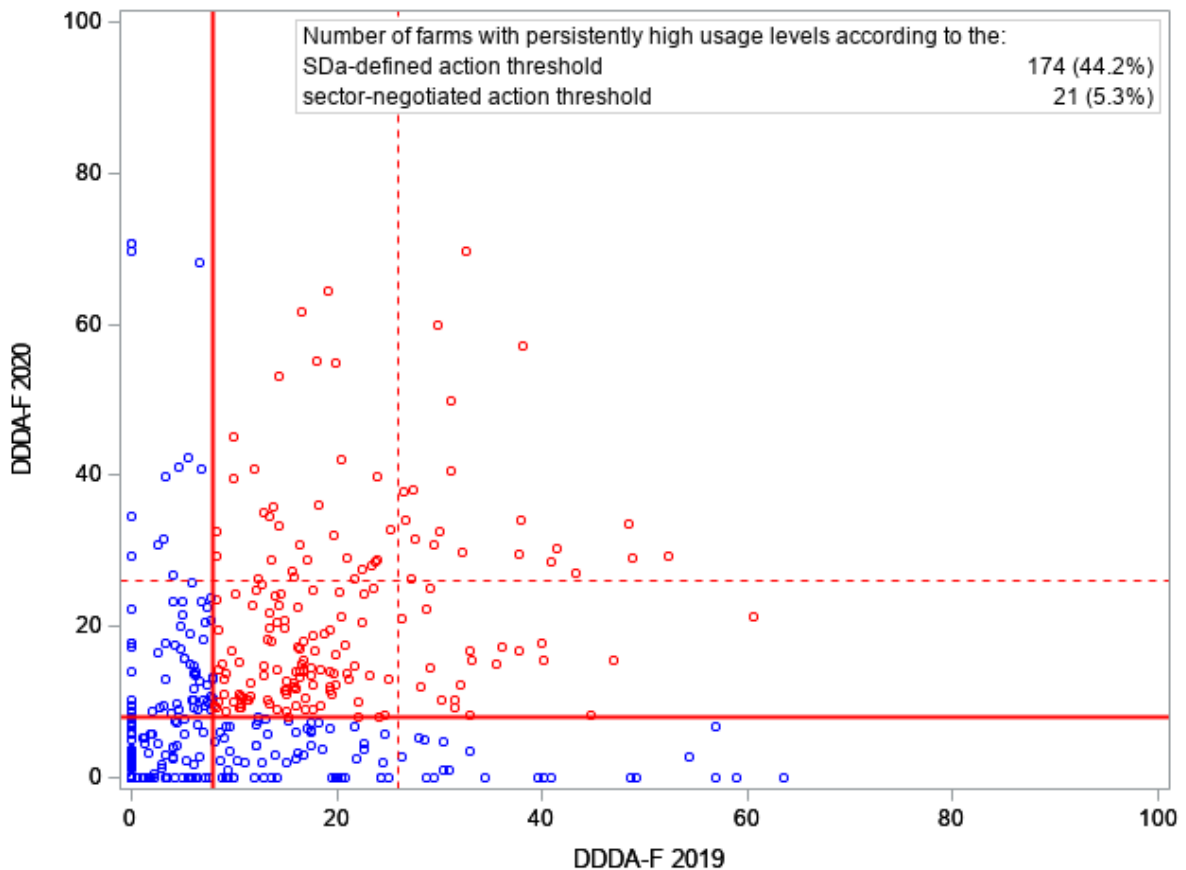


Table A7. Antibiotic use in DDDA<sub>F</sub> at broiler farms with conventional breeds in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with DDDA <sub>F</sub> =0 | DDD <sub>F</sub> |      |      |
|--------|---------------------------|-------------------------|--------------------------------------|------------------|------|------|
|        |                           |                         |                                      | Median           | P75  | Mean |
| 1      | Macrolides/lincosamides   | Oral                    | 371                                  | 0.00             | 0.00 | 0.33 |
| 1      | Penicillins               | Oral                    | 321                                  | 0.00             | 0.00 | 1.01 |
| 1      | Tetracyclines             | Oral                    | 258                                  | 0.00             | 1.58 | 1.52 |
| 1      | Trimethoprim/sulfonamides | Oral                    | 166                                  | 1.55             | 5.44 | 3.98 |
| 2      | Aminoglycosides           | Oral                    | 392                                  | 0.00             | 0.00 | 0.00 |
| 2      | Aminopenicillins          | Oral                    | 166                                  | 2.26             | 6.97 | 4.41 |
| 2      | Quinolones                | Oral                    | 262                                  | 0.00             | 1.32 | 1.40 |
| 2      | Fixed-dose combinations   | Oral                    | 388                                  | 0.00             | 0.00 | 0.07 |
| 2      | Macrolides/lincosamides   | Oral                    | 350                                  | 0.00             | 0.00 | 0.18 |
| 2      | Penicillins               | Oral                    | 387                                  | 0.00             | 0.00 | 0.21 |
| 3      | Fluoroquinolones          | Oral                    | 378                                  | 0.00             | 0.00 | 0.19 |
| 3      | Polymyxins                | Oral                    | 387                                  | 0.00             | 0.00 | 0.05 |

### 2.3 Broiler farms with alternative breeds

Number of farms: 525

Number of farms with  $DDDA_F=0$ : 339 (64.6%)

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

Number of farms that used fluoroquinolones: 3 (0.6%)

Number of farms that used polymyxins: 1 (0.2%)

Table A8. Antibiotic use in  $DDDA_F$  at broiler farms with alternative breeds from 2016 to 2020\*\*

| 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  |

\* These antibiotics are not allowed for poultry.

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

Figure B6. 2018, 2019 and 2020  $DDDA_F$  distributions for broiler farms with alternative breeds

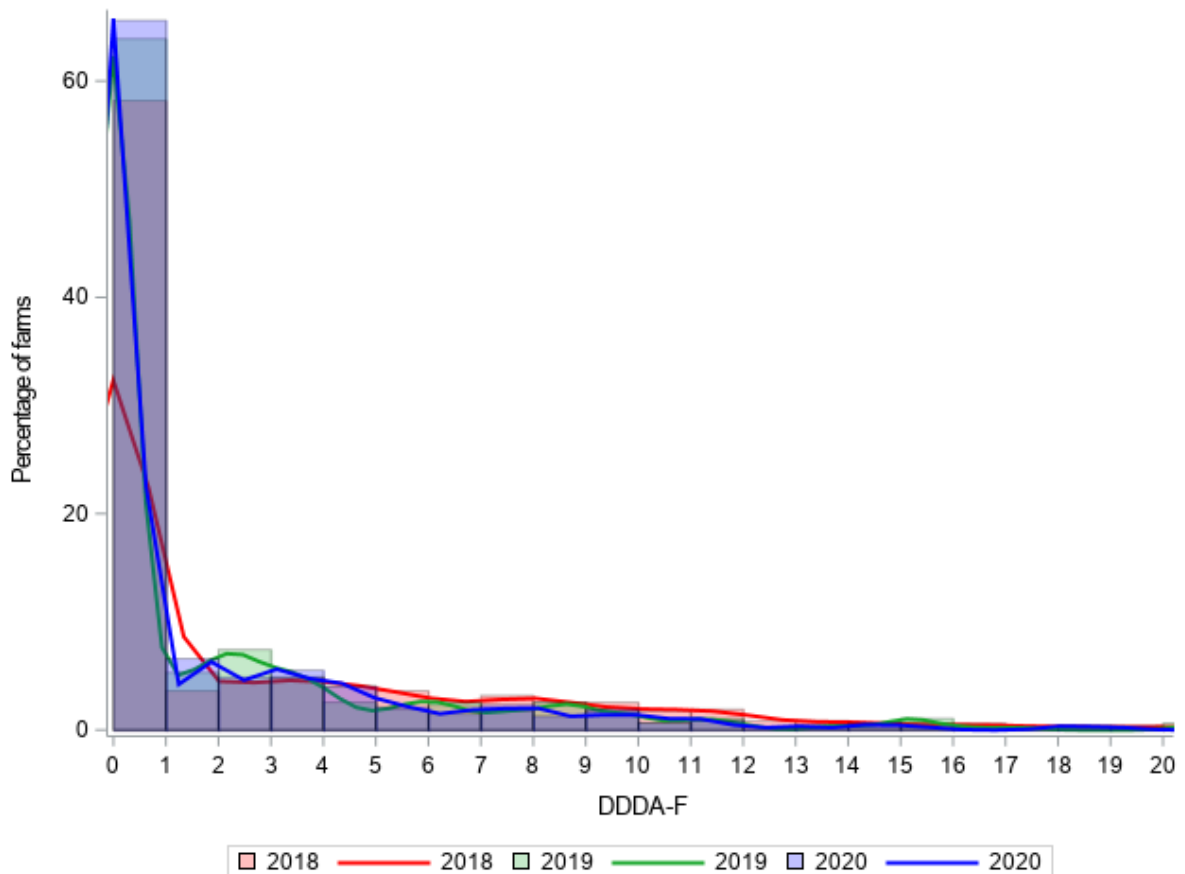


Figure B7. Scatter plot of 2019 and 2020 DDDA<sub>F</sub> values for broiler farms with alternative breeds. The red solid lines represent the action thresholds defined by the SDa. The red dotted line represents the transitional action threshold negotiated by the livestock sector. For each type of action threshold, the number of farms with persistently high usage levels is listed in the center-right part of the scatter plot

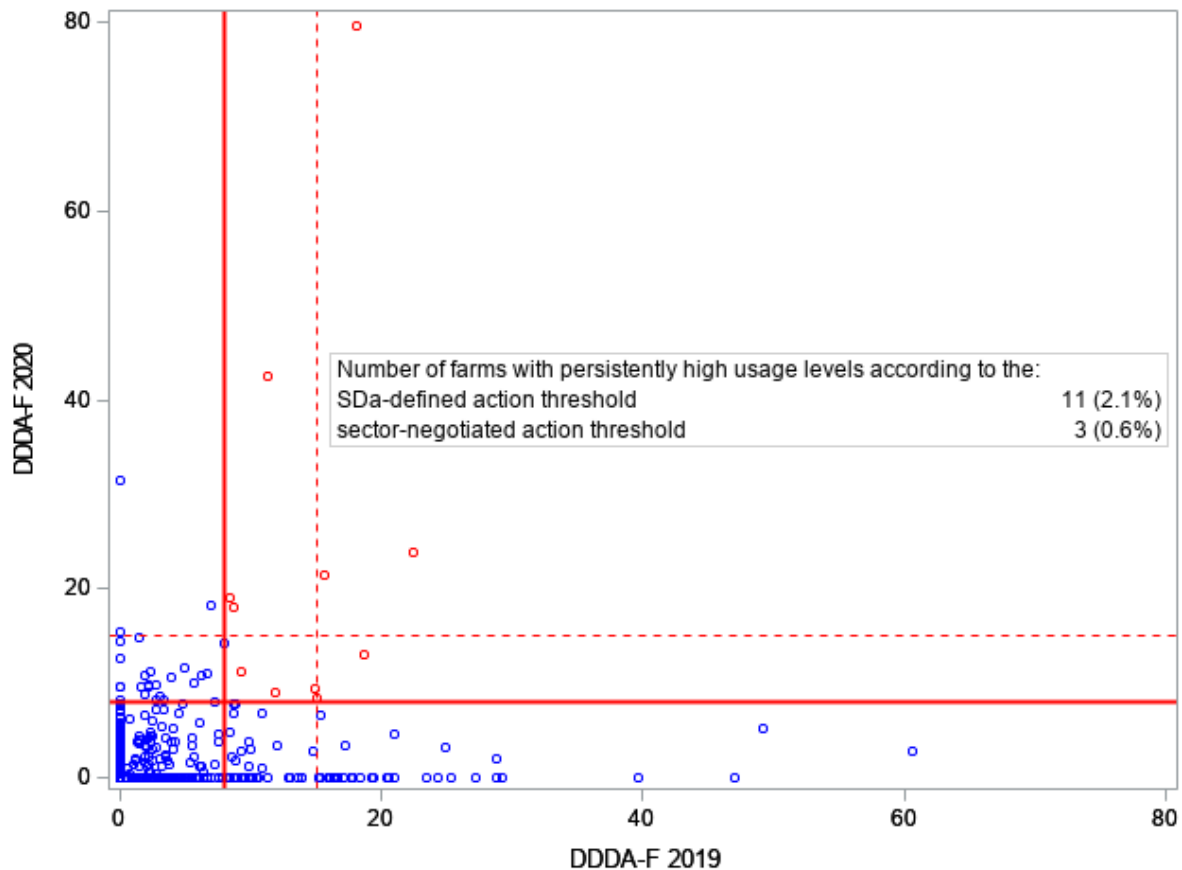


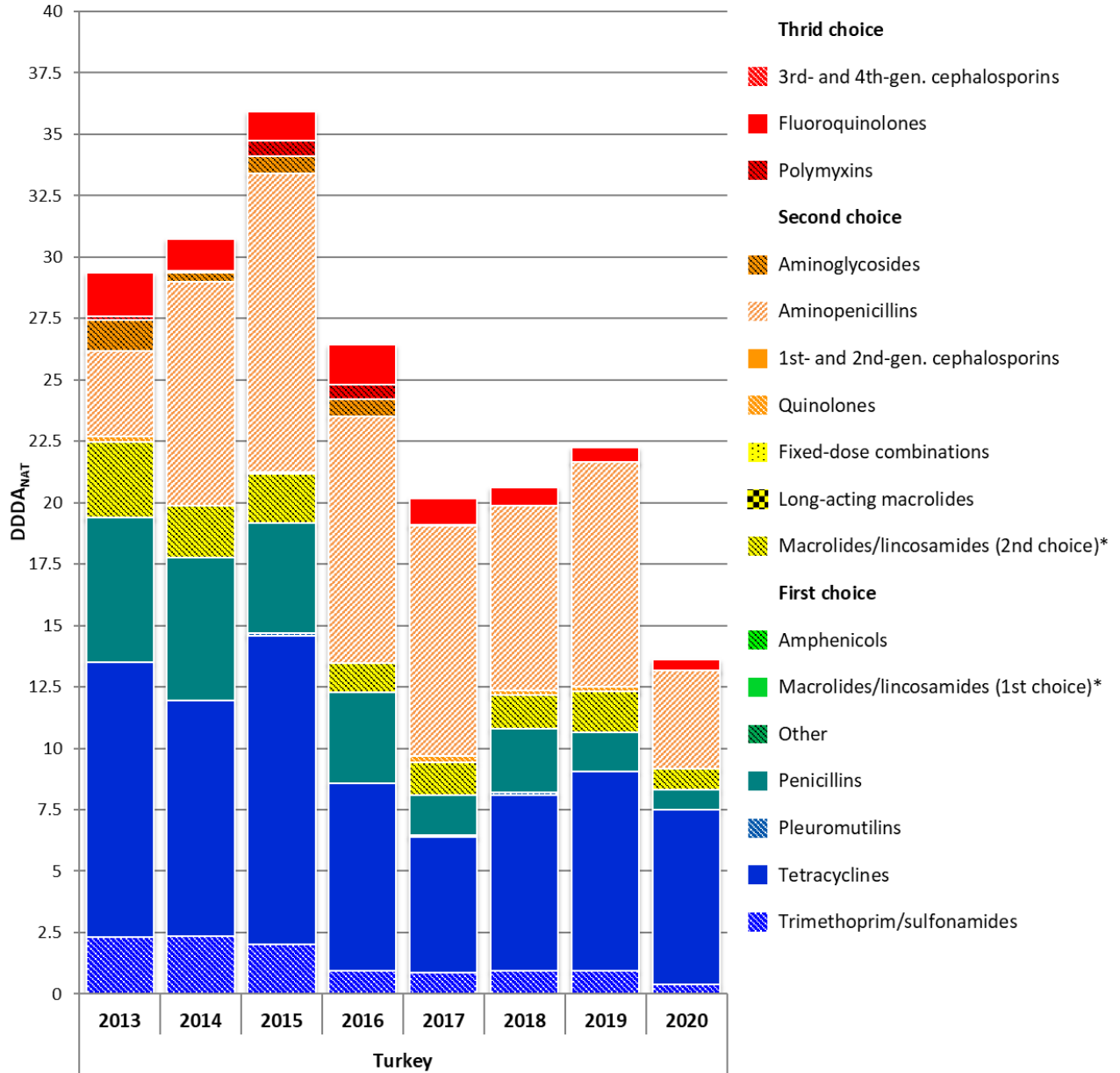
Table A9. Antibiotic use in DDDA<sub>F</sub> at broiler farms with alternative breeds in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with DDDA <sub>F</sub> =0 | DDD <sub>A</sub> <sub>F</sub> |      |      |
|--------|---------------------------|-------------------------|--------------------------------------|-------------------------------|------|------|
|        |                           |                         |                                      | Median                        | P75  | Mean |
| 1      | Penicillins               | Oral                    | 499                                  | 0.00                          | 0.00 | 0.23 |
| 1      | Tetracyclines             | Oral                    | 469                                  | 0.00                          | 0.00 | 0.44 |
| 1      | Trimethoprim/sulfonamides | Oral                    | 445                                  | 0.00                          | 0.00 | 0.62 |
| 2      | Aminopenicillins          | Oral                    | 463                                  | 0.00                          | 0.00 | 0.55 |
| 2      | Quinolones                | Oral                    | 480                                  | 0.00                          | 0.00 | 0.24 |
| 2      | Macrolides/lincosamides   | Oral                    | 516                                  | 0.00                          | 0.00 | 0.02 |
| 2      | Penicillins               | Oral                    | 523                                  | 0.00                          | 0.00 | 0.01 |
| 3      | Fluoroquinolones          | Oral                    | 522                                  | 0.00                          | 0.00 | 0.02 |
| 3      | Polymyxins                | Oral                    | 524                                  | 0.00                          | 0.00 | 0.00 |

## Turkey farming sector

### 1. Antibiotic use in DDDA<sub>NAT</sub>

Figure B8. DDDA<sub>NAT</sub> trends in the turkey farming sector over the 2013-2020 period, by pharmacotherapeutic group



\* In the poultry farming sector, all macrolides/lincosamides (with the exception of lincomycin and spiramycin) are categorized as second-choice antibiotics. In other livestock sectors, only long-acting macrolides are categorized as second-choice antibiotics.



## 2. DDDA<sub>F</sub>

Number of farms: 43

Number of farms with DDDA<sub>F</sub>=0: 7 (16.3%)

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

Number of farms that used fluoroquinolones: 15 (39.5%)

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

Table A10. Antibiotic use in DDDA<sub>F</sub> at turkey farms from 2016 to 2020\*\*

| 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 |

\* These antibiotics are not allowed for poultry.

\*\* Only years for which similar DDDA<sub>F</sub> calculation methods were used have been included.

Figure B9. 2013, 2019 and 2020 DDDA<sub>F</sub> distributions for turkey farms, with 2019 and 2020 DDDA<sub>F</sub> values based on standardized body weights

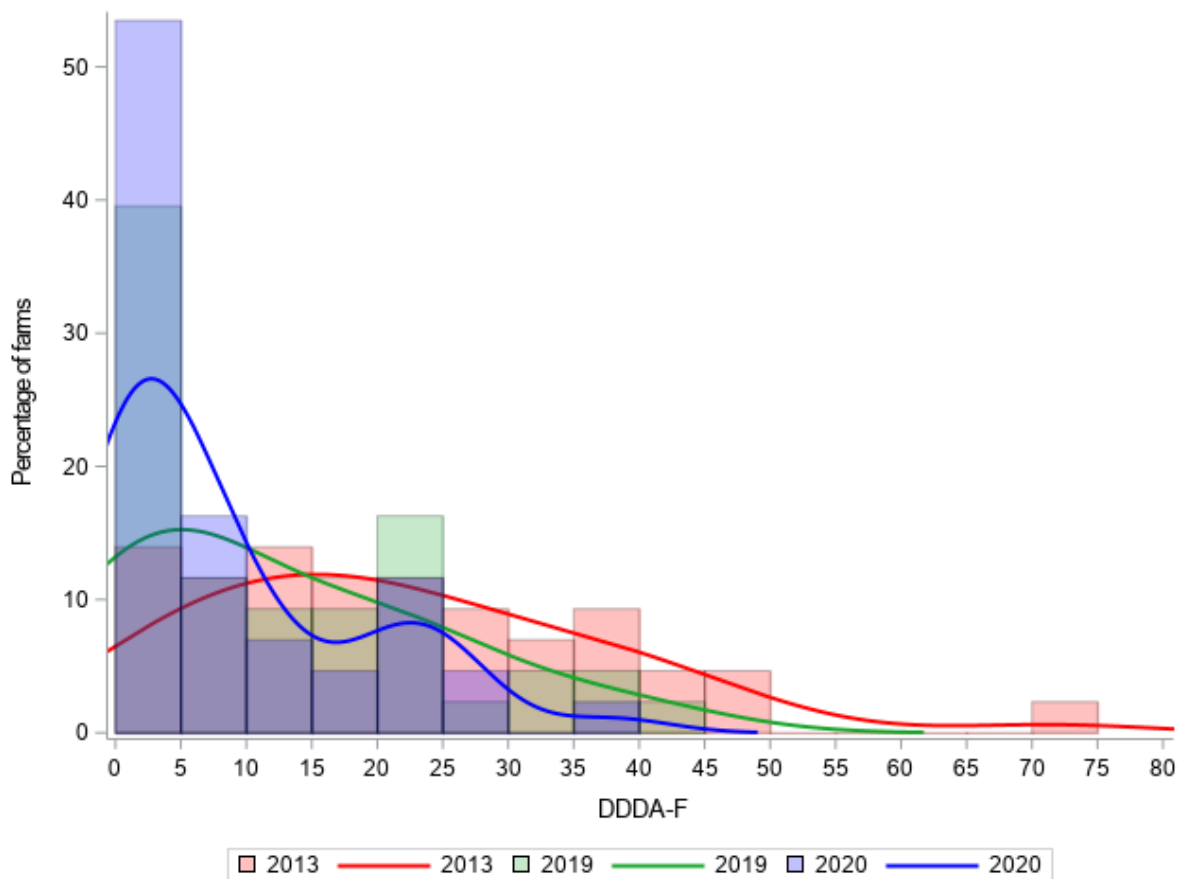
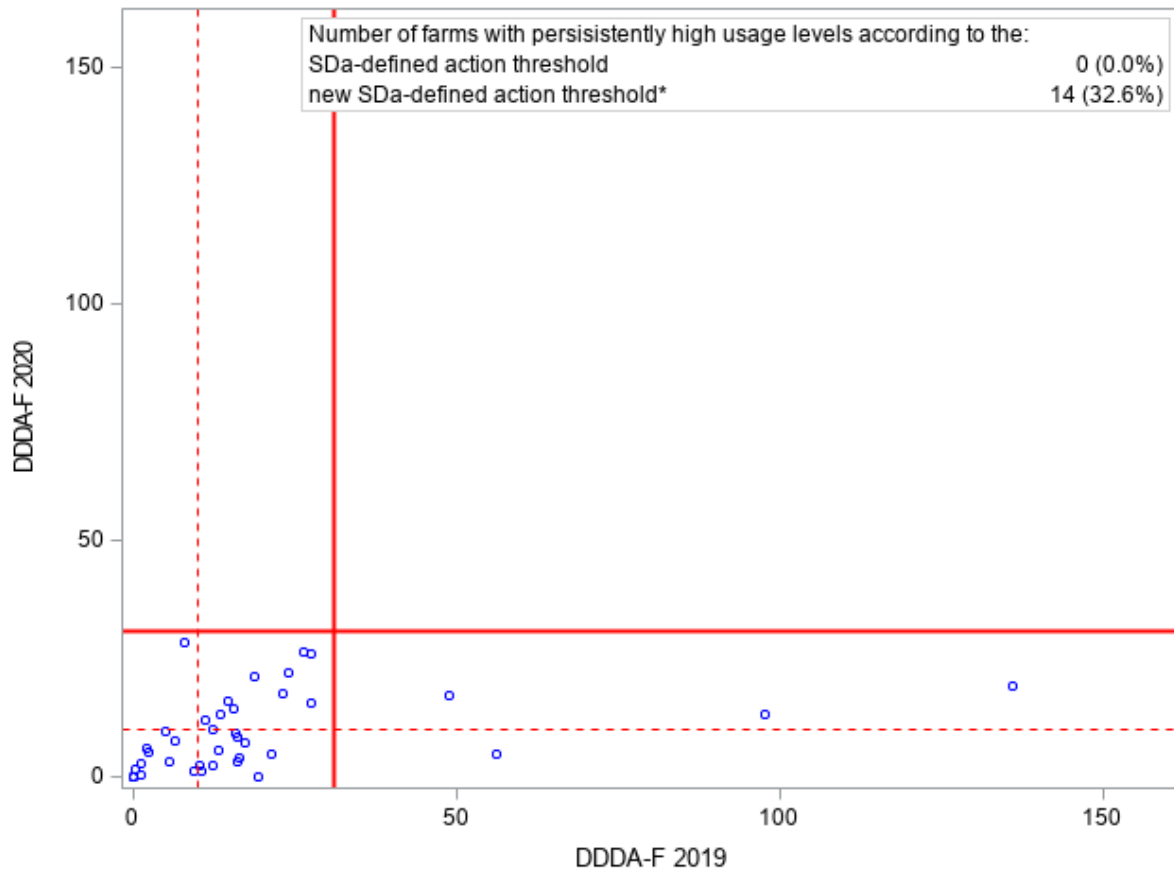


Figure B10. Scatter plot of 2019 and 2020 DDDA<sub>F</sub> values for turkey farms. The red solid lines represent the action thresholds defined by the SDa. The red dotted line represents the new action thresholds applied as of 2021. For each type of action threshold, the number of farms with persistently high usage levels is listed in the upper-right corner of the scatter plot



\* The new benchmark value to be applied as of 2021.

Table A11. Antibiotic use in DDDA<sub>F</sub> at turkey farms in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |      |      |
|--------|---------------------------|-------------------------|--------------------------------------|-------------------|------|------|
|        |                           |                         |                                      | Median            | P75  | Mean |
| 1      | Penicillins               | Oral                    | 36                                   | 0.00              | 0.00 | 0.56 |
| 1      | Tetracyclines             | Oral                    | 9                                    | 3.68              | 5.52 | 4.31 |
| 1      | Trimethoprim/sulfonamides | Oral                    | 39                                   | 0.00              | 0.00 | 0.48 |
| 2      | Aminoglycosides           | Oral                    | 42                                   | 0.00              | 0.00 | 0.00 |
| 2      | Aminopenicillins          | Oral                    | 39                                   | 0.00              | 0.00 | 0.21 |
| 2      | Macrolides/lincosamides   | Oral                    | 21                                   | 0.14              | 0.95 | 0.55 |
| 2      | Penicillins               | Oral                    | 27                                   | 0.00              | 3.52 | 2.58 |
| 3      | Fluoroquinolones          | Oral                    | 26                                   | 0.00              | 1.03 | 0.57 |

## Layer farming sector

### 1. Antibiotic use in DDDA<sub>F</sub>

#### 1.1 Layer farms

Number of farms: 818

Number of farms with DDDA<sub>F</sub>=0: 568 (69.4%)

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: 128 (15.6%)

Table A12. Antibiotic use in DDDA<sub>F</sub> at layer farms from 2017 to 2020\*\*

| 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 |

\* These antibiotics are not allowed for poultry.

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

Figure B11. 2019 and 2020 DDDA<sub>F</sub> distributions for layer farms (no probability density functions can be shown due to too little variation)

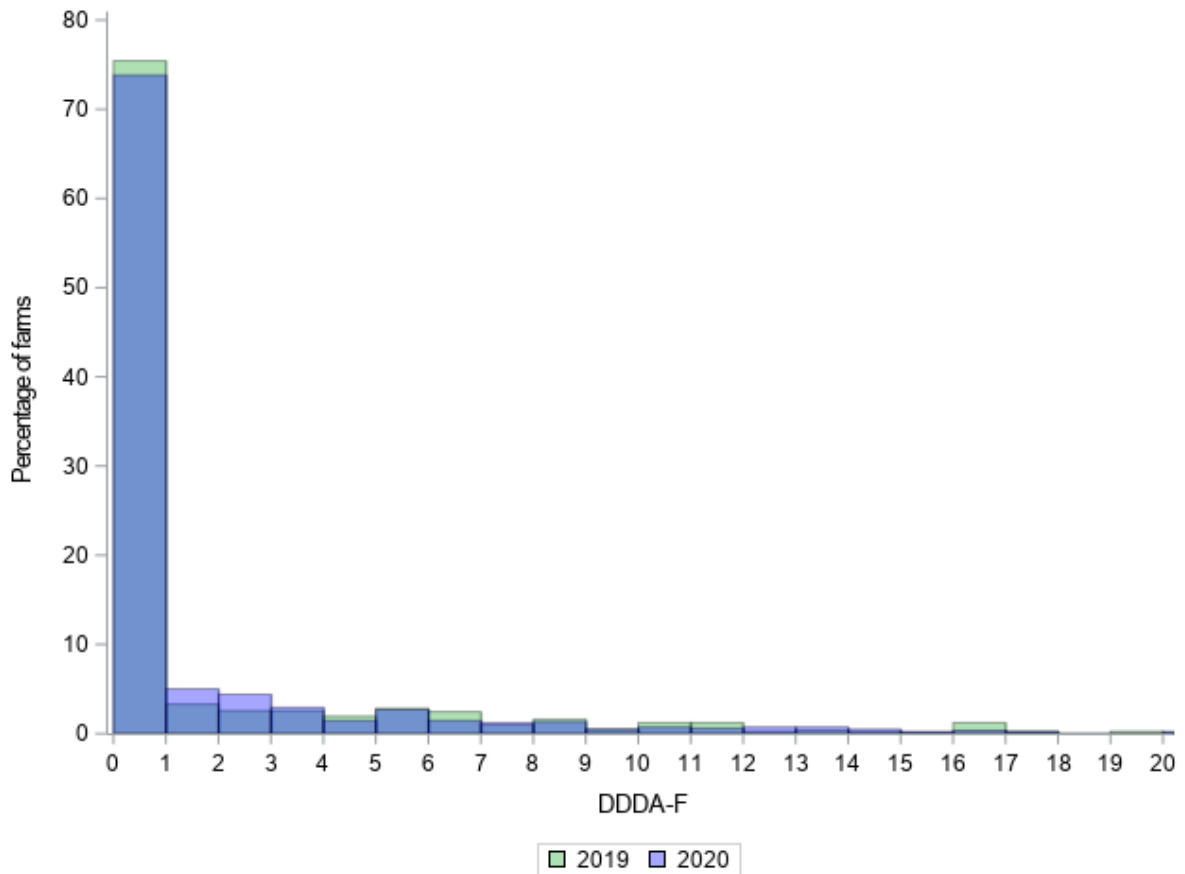


Table A13 Antibiotic use in  $DDDA_F$  at layer farms in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with $DDDA_F=0$ | $DDDA_F$ |      |      |
|--------|---------------------------|-------------------------|----------------------------|----------|------|------|
|        |                           |                         |                            | Median   | P75  | Mean |
| 1      | Penicillins               | Oral                    | 760                        | 0.00     | 0.00 | 0.35 |
| 1      | Pleuromutilins            | Oral                    | 812                        | 0.00     | 0.00 | 0.04 |
| 2      | Macrolides/lincosamides   | Oral                    | 699                        | 0.00     | 0.00 | 0.26 |
| 3      | Polymyxins                | Oral                    | 690                        | 0.00     | 0.00 | 1.06 |

**1.2 Layer rearing farms**

Number of farms: 175

Number of farms with DDDA<sub>F</sub>=0: 100 (57.1%)

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

Number of farms that used fluoroquinolones: 1 (0.6%)

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

Table A14. Antibiotic use in DDDA<sub>F</sub> at layer rearing farms from 2017 to 2020\*\*

| 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 |

\* These antibiotics are not allowed for poultry.

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

Figure B12. 2019 and 2020 DDDA<sub>F</sub> distributions for layer rearing farms (no probability density functions can be shown due to too little variation)

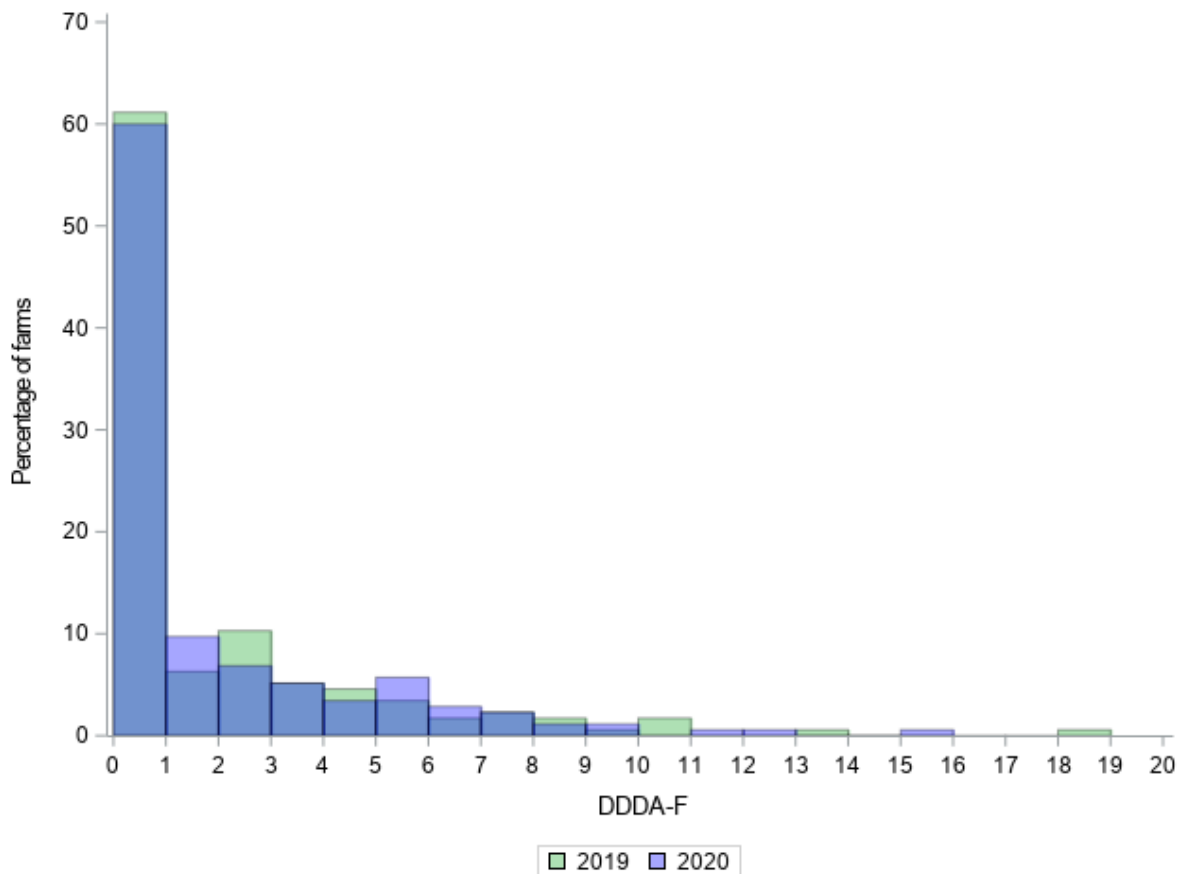


Table A15. Antibiotic use in DDDA<sub>F</sub> at layer rearing farms in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |      |      |
|--------|---------------------------|-------------------------|--------------------------------------|-------------------|------|------|
|        |                           |                         |                                      | Median            | P75  | Mean |
| 1      | Penicillins               | Oral                    | 127                                  | 0.00              | 1.07 | 0.87 |
| 1      | Tetracyclines             | Oral                    | 158                                  | 0.00              | 0.00 | 0.39 |
| 1      | Trimethoprim/sulfonamides | Oral                    | 172                                  | 0.00              | 0.00 | 0.05 |
| 2      | Aminopenicillins          | Oral                    | 172                                  | 0.00              | 0.00 | 0.12 |
| 2      | Macrolides/lincosamides   | Oral                    | 143                                  | 0.00              | 0.00 | 0.34 |
| 3      | Fluoroquinolones          | Oral                    | 174                                  | 0.00              | 0.00 | 0.01 |

**1.3 Parent stock rearing farms**

Number of farms: 15

Number of farms with DDDA<sub>F</sub>=0: 7 (46.7%)

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 A16. Antibiotic use in DDDA<sub>F</sub> at parent stock rearing farms from 2017 to 2020\*\*

| Year | N  | Mean | Median | P75  | P90  |
|------|----|------|--------|------|------|
| 2017 | 18 | 9.9  | 0.0    | 11.3 | 20.3 |
| 2018 | 18 | 8.0  | 0.0    | 12.8 | 28.7 |
| 2019 | 16 | 7.6  | 0.0    | 11.2 | 20.9 |
| 2020 | 15 | 6.0  | 3.4    | 8.7  | 14.8 |

\* These antibiotics are not allowed for poultry.

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

Figure B13. 2019 and 2020 DDDA<sub>F</sub> distributions for parent stock rearing farms (no probability density functions can be shown due to too little variation)

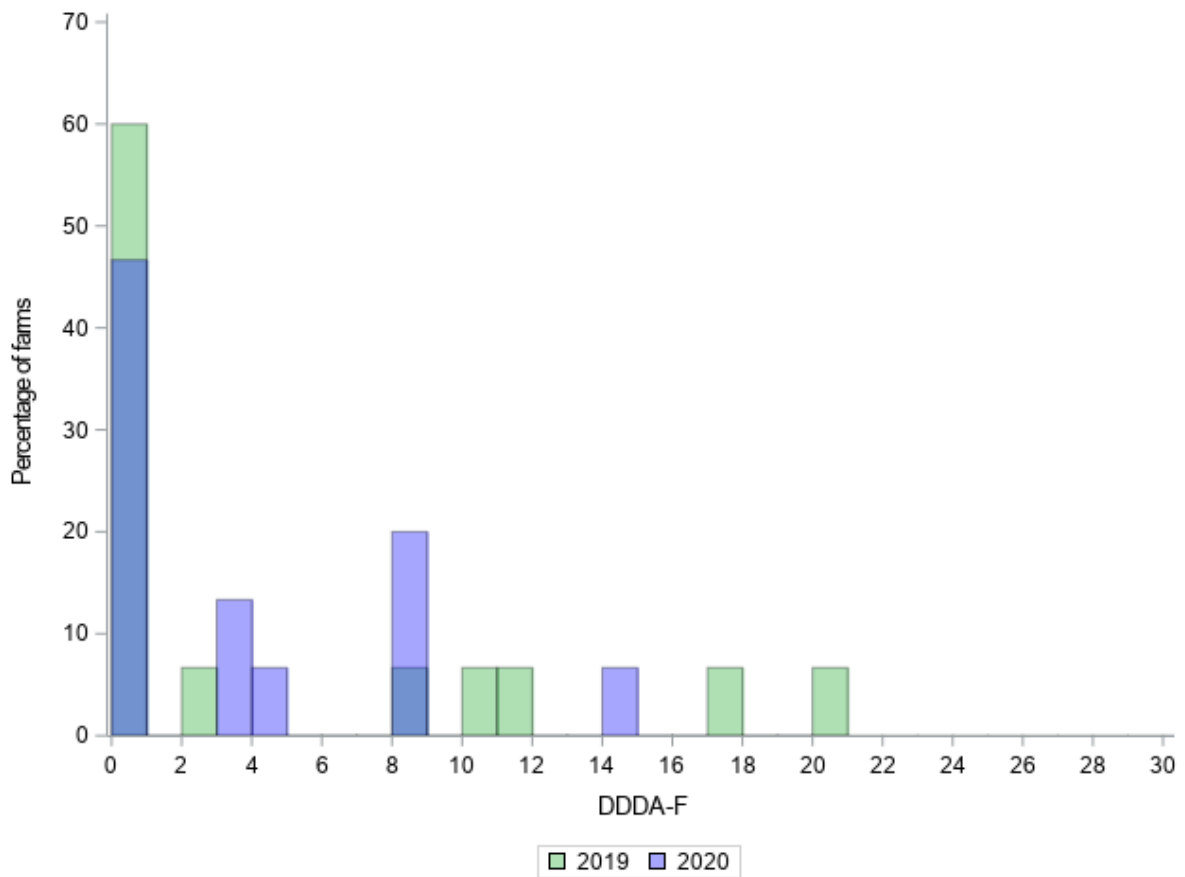


Table A17. Antibiotic use in DDDA<sub>F</sub> at parent stock rearing farms in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |      |      |
|--------|---------------------------|-------------------------|--------------------------------------|-------------------|------|------|
|        |                           |                         |                                      | Median            | P75  | Mean |
| 1      | Penicillins               | Oral                    | 10                                   | 0.00              | 3.62 | 2.02 |
| 1      | Tetracyclines             | Oral                    | 12                                   | 0.00              | 0.00 | 1.36 |
| 1      | Trimethoprim/sulfonamides | Oral                    | 14                                   | 0.00              | 0.00 | 0.15 |
| 2      | Quinolones                | Oral                    | 14                                   | 0.00              | 0.00 | 2.49 |



**1.4 Parent stock production farms**

Number of farms: 41

Number of farms with  $DDDA_F=0$ : 19 (46.3%)

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: 2 (4.9%)

Table A18. Antibiotic use in  $DDDA_F$  at parent stock production farms from 2017 to 2020\*\*

| Year | N  | Mean | Median | P75 | P90  |
|------|----|------|--------|-----|------|
| 2017 | 36 | 3.7  | 0.0    | 6.3 | 10.0 |
| 2018 | 37 | 3.6  | 0.0    | 5.7 | 11.9 |
| 2019 | 43 | 4.2  | 0.0    | 3.5 | 12.0 |
| 2020 | 41 | 3.4  | 1.3    | 4.2 | 8.9  |

\* These antibiotics are not allowed for poultry.

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

Figure B14. 2018 and 2019  $DDDA_F$  distributions for parent stock production farms (no probability density functions can be shown due to too little variation)

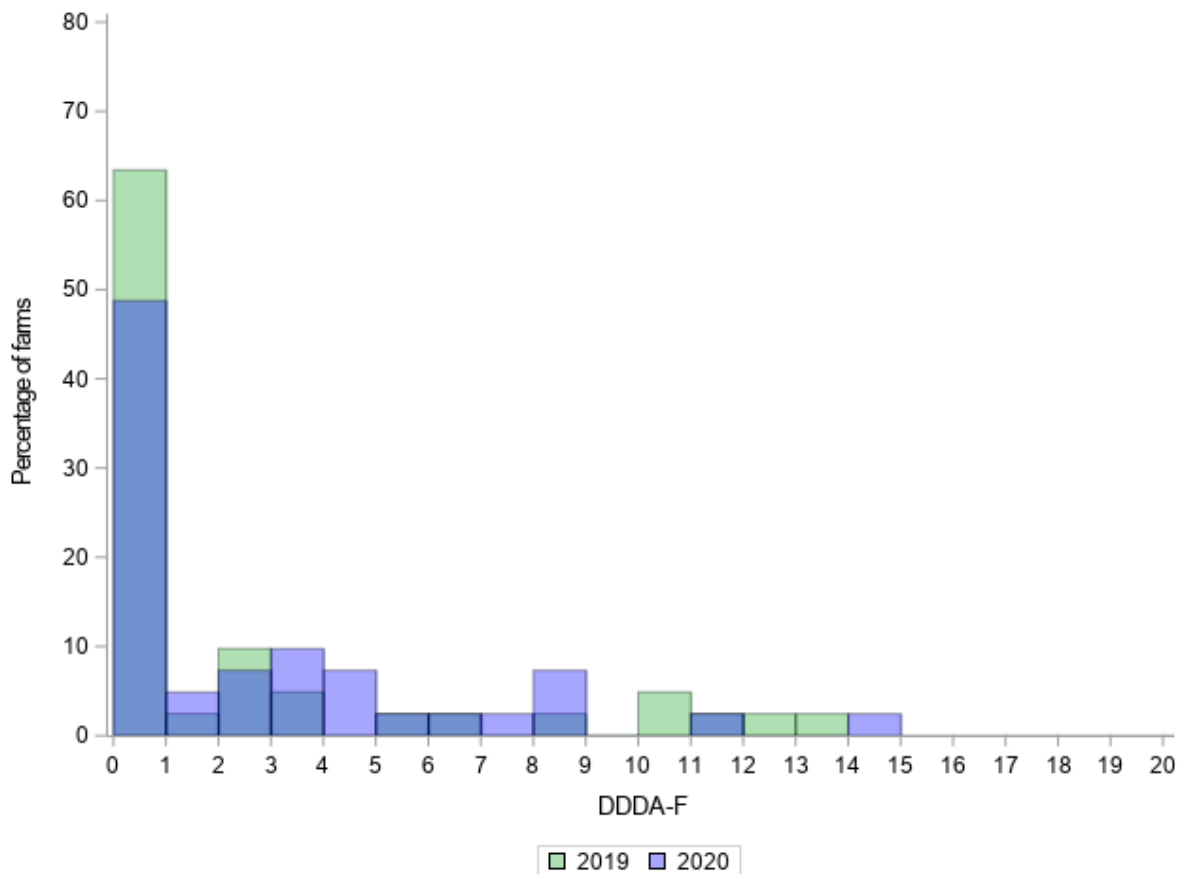


Table A19. Antibiotic use in DDDA<sub>F</sub> at parent stock production farms in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |      |      |
|--------|---------------------------|-------------------------|--------------------------------------|-------------------|------|------|
|        |                           |                         |                                      | Median            | P75  | Mean |
| 1      | Penicillins               | Oral                    | 35                                   | 0.00              | 0.00 | 0.69 |
| 1      | Tetracyclines             | Oral                    | 34                                   | 0.00              | 0.00 | 1.15 |
| 1      | Trimethoprim/sulfonamides | Oral                    | 39                                   | 0.00              | 0.00 | 0.18 |
| 2      | Quinolones                | Oral                    | 40                                   | 0.00              | 0.00 | 0.10 |
| 2      | Macrolides/lincosamides   | Oral                    | 28                                   | 0.00              | 0.96 | 1.04 |
| 3      | Polymyxins                | Oral                    | 39                                   | 0.00              | 0.00 | 0.24 |

### 1.5 Grandparent stock rearing farms

Number of farms: 2

Number of farms with  $DDDA_F=0$ : 2 (100%)

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 A20. Antibiotic use in  $DDDA_F$  at grandparent stock rearing farms from 2017 to 2020\*\*

| Year | N | Mean | Median | P75 | P90 |
|------|---|------|--------|-----|-----|
| 2017 | 3 | 0.0  | 0.0    | 0.0 | 0.0 |
| 2018 | 2 | 0.0  | 0.0    | 0.0 | 0.0 |
| 2019 | 3 | 0.0  | 0.0    | 0.0 | 0.0 |
| 2020 | 2 | 0.0  | 0.0    | 0.0 | 0.0 |

\* These antibiotics are not allowed for poultry.

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

### 1.6 Grandparent stock production farms

Number of farms: 7

Number of farms with  $DDDA_F=0$ : 5 (71,4%)

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 A21. Antibiotic use in  $DDDA_F$  at grandparent stock production farms from 2017 to 2020\*\*

| Year | N | Mean | Median | P75 | P90 |
|------|---|------|--------|-----|-----|
| 2017 | 7 | 0.9  | 0.0    | 2.6 | 3.6 |
| 2018 | 6 | 0.6  | 0.0    | 0.0 | 3.4 |
| 2019 | 8 | 0.2  | 0.0    | 0.0 | 1.5 |
| 2020 | 7 | 1.0  | 0.0    | 3.2 | 3.4 |

\* These antibiotics are not allowed for poultry.

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

Table A22. Antibiotic use in  $DDDA_F$  at grandparent stock production farms in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with $DDDA_F=0$ | $DDDA_F$ |      |      |
|--------|---------------------------|-------------------------|----------------------------|----------|------|------|
|        |                           |                         |                            | Median   | P75  | Mean |
| 1      | Penicillins               | Oral                    | 5                          | 0.00     | 3.22 | 0.95 |

## Broiler parent/grandparent stock farming sector

### 1. Antibiotic use in DDDA<sub>F</sub>

#### 1.1 Parent stock rearing farms

Number of farms: 87

Number of farms with DDDA<sub>F</sub>=0: 12 (13.8%)

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

Number of farms that used fluoroquinolones: 9 (10.3%)

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

Table A23. Antibiotic use in DDDA<sub>F</sub> at parent stock rearing farms from 2017 to 2020\*\*

| Year | N   | Mean | Median | P75  | P90  |
|------|-----|------|--------|------|------|
| 2017 | 104 | 14.3 | 9.1    | 18.2 | 29.9 |
| 2018 | 89  | 16.9 | 12.2   | 23.9 | 36.4 |
| 2019 | 91  | 15.4 | 11.3   | 20.5 | 31.1 |
| 2020 | 87  | 10.0 | 8.1    | 14.3 | 19.4 |

\* These antibiotics are not allowed for poultry.

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

Figure B15. 2019 and 2020 DDDA<sub>F</sub> distributions for parent stock rearing farms

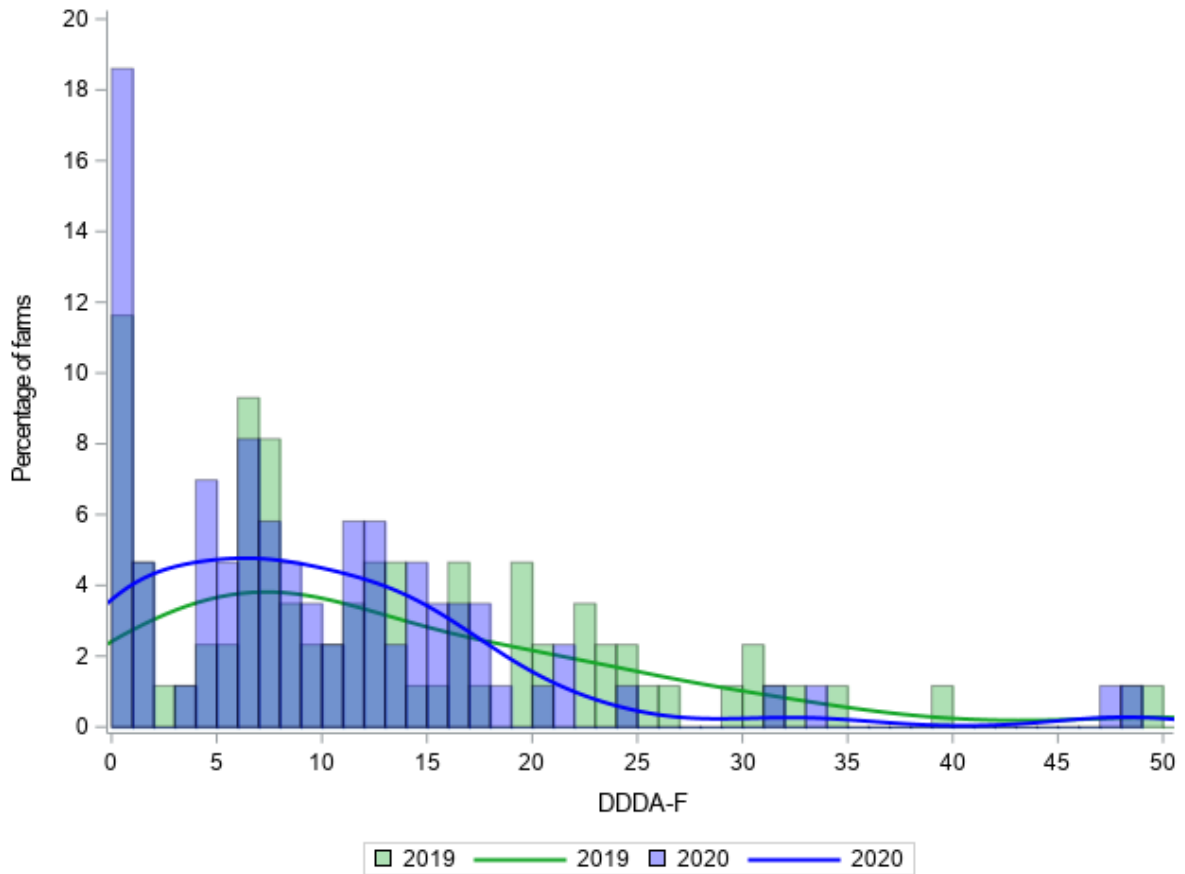


Table A24. Antibiotic use in DDDA<sub>F</sub> at parent stock rearing farms in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |      |      |
|--------|---------------------------|-------------------------|--------------------------------------|-------------------|------|------|
|        |                           |                         |                                      | Median            | P75  | Mean |
| 1      | Penicillins               | Oral                    | 48                                   | 0.00              | 2.65 | 2.65 |
| 1      | Tetracyclines             | Oral                    | 68                                   | 0.00              | 0.00 | 1.18 |
| 1      | Trimethoprim/sulfonamides | Oral                    | 31                                   | 2.31              | 4.55 | 3.26 |
| 2      | Aminopenicillins          | Oral                    | 51                                   | 0.00              | 3.09 | 2.25 |
| 2      | Quinolones                | Oral                    | 78                                   | 0.00              | 0.00 | 0.30 |
| 2      | Macrolides/lincosamides   | Oral                    | 86                                   | 0.00              | 0.00 | 0.02 |
| 3      | Fluoroquinolones          | Oral                    | 78                                   | 0.00              | 0.00 | 0.31 |

**1.2 Parent stock production farms**

Number of farms: 199

Number of farms with DDDA<sub>F</sub>=0: 137 (68.8%)

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

Number of farms that used fluoroquinolones: 6 (3.0%)

Number of farms that used polymyxins: 2 (1.0%)

Table A25. Antibiotic use in DDDA<sub>F</sub> at parent stock production farms from 2017 to 2020\*\*

| Year | N   | Mean | Median | P75 | P90 |
|------|-----|------|--------|-----|-----|
| 2017 | 230 | 2.6  | 0.0    | 3.4 | 9.0 |
| 2018 | 196 | 2.7  | 0.0    | 3.8 | 8.4 |
| 2019 | 204 | 1.7  | 0.0    | 1.0 | 6.7 |
| 2020 | 199 | 4.3  | 0.0    | 2.5 | 8.1 |

\* These antibiotics are not allowed for poultry.

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

Figure B16. 2018 and 2019 DDDA<sub>F</sub> distributions for parent stock production farms

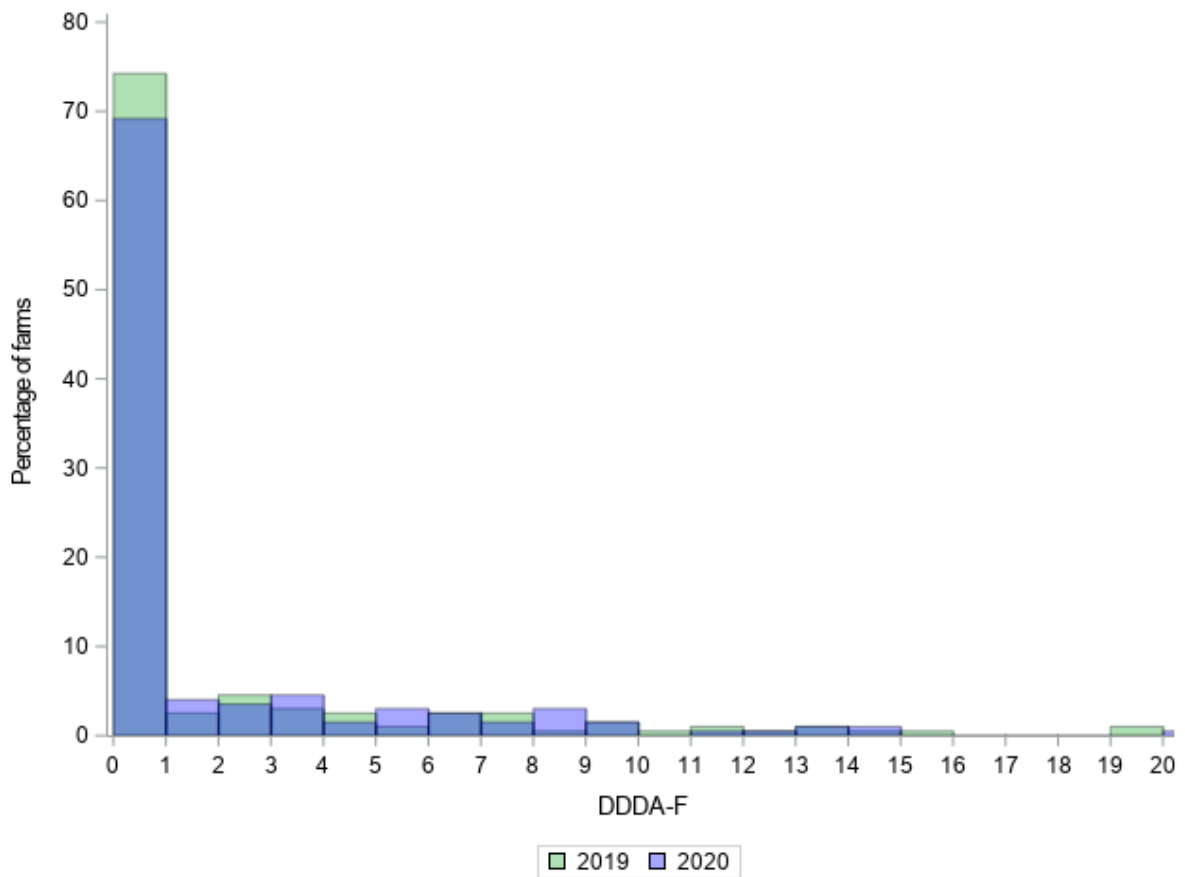


Table A26. Antibiotic use in DDDA<sub>F</sub> at parent stock production farms in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |      |      |
|--------|---------------------------|-------------------------|--------------------------------------|-------------------|------|------|
|        |                           |                         |                                      | Median            | P75  | Mean |
| 1      | Penicillins               | Oral                    | 191                                  | 0.00              | 0.00 | 0.15 |
| 1      | Tetracyclines             | Oral                    | 162                                  | 0.00              | 0.00 | 2.65 |
| 1      | Trimethoprim/sulfonamides | Oral                    | 191                                  | 0.00              | 0.00 | 0.62 |
| 2      | Aminopenicillins          | Oral                    | 197                                  | 0.00              | 0.00 | 0.06 |
| 2      | Quinolones                | Oral                    | 174                                  | 0.00              | 0.00 | 0.65 |
| 2      | Macrolides/lincosamides   | Oral                    | 195                                  | 0.00              | 0.00 | 0.02 |
| 3      | Fluoroquinolones          | Oral                    | 193                                  | 0.00              | 0.00 | 0.06 |
| 3      | Polymyxins                | Oral                    | 197                                  | 0.00              | 0.00 | 0.04 |

### 1.3 Grandparent stock rearing farms

Number of farms: 13

Number of farms with  $DDDA_F=0$ : 4 (30.8%)

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 A27. Antibiotic use in  $DDDA_F$  at grandparent stock rearing farms from 2017 to 2020\*\*

| Year | N  | Mean | Median | P75  | P90  |
|------|----|------|--------|------|------|
| 2017 | 12 | 3.9  | 1.0    | 7.8  | 11.1 |
| 2018 | 10 | 5.7  | 5.6    | 11.7 | 12.8 |
| 2019 | 12 | 8.3  | 7.4    | 16.0 | 16.4 |
| 2020 | 13 | 7.1  | 6.8    | 13.2 | 16.8 |

\* These antibiotics are not allowed for poultry.

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

Table A28. Antibiotic use in  $DDDA_F$  at grandparent stock rearing farms in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with $DDDA_F=0$ | $DDDA_F$ |      |      |
|--------|---------------------------|-------------------------|----------------------------|----------|------|------|
|        |                           |                         |                            | Median   | P75  | Mean |
| 1      | Penicillins               | Oral                    | 7                          | 0.00     | 2.92 | 1.77 |
| 1      | Tetracyclines             | Oral                    | 6                          | 1.51     | 6.28 | 2.92 |
| 1      | Trimethoprim/sulfonamides | Oral                    | 8                          | 0.00     | 1.28 | 0.68 |
| 2      | Quinolones                | Oral                    | 9                          | 0.00     | 2.29 | 1.79 |



#### 1.4 Grandparent stock production farms

Number of farms: 21

Number of farms with  $DDDA_F=0$ : 15 (71.4%)

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 A29. Antibiotic use in  $DDDA_F$  at grandparent stock production farms from 2017 to 2020\*\*

| Year | N  | Mean | Median | P75 | P90  |
|------|----|------|--------|-----|------|
| 2017 | 20 | 5.2  | 3.1    | 7.7 | 16.8 |
| 2018 | 19 | 3.0  | 0.0    | 7.1 | 9.4  |
| 2019 | 20 | 5.3  | 0.0    | 8.8 | 20.1 |
| 2020 | 21 | 4.2  | 0.0    | 1.2 | 16.1 |

\* These antibiotics are not allowed for poultry.

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

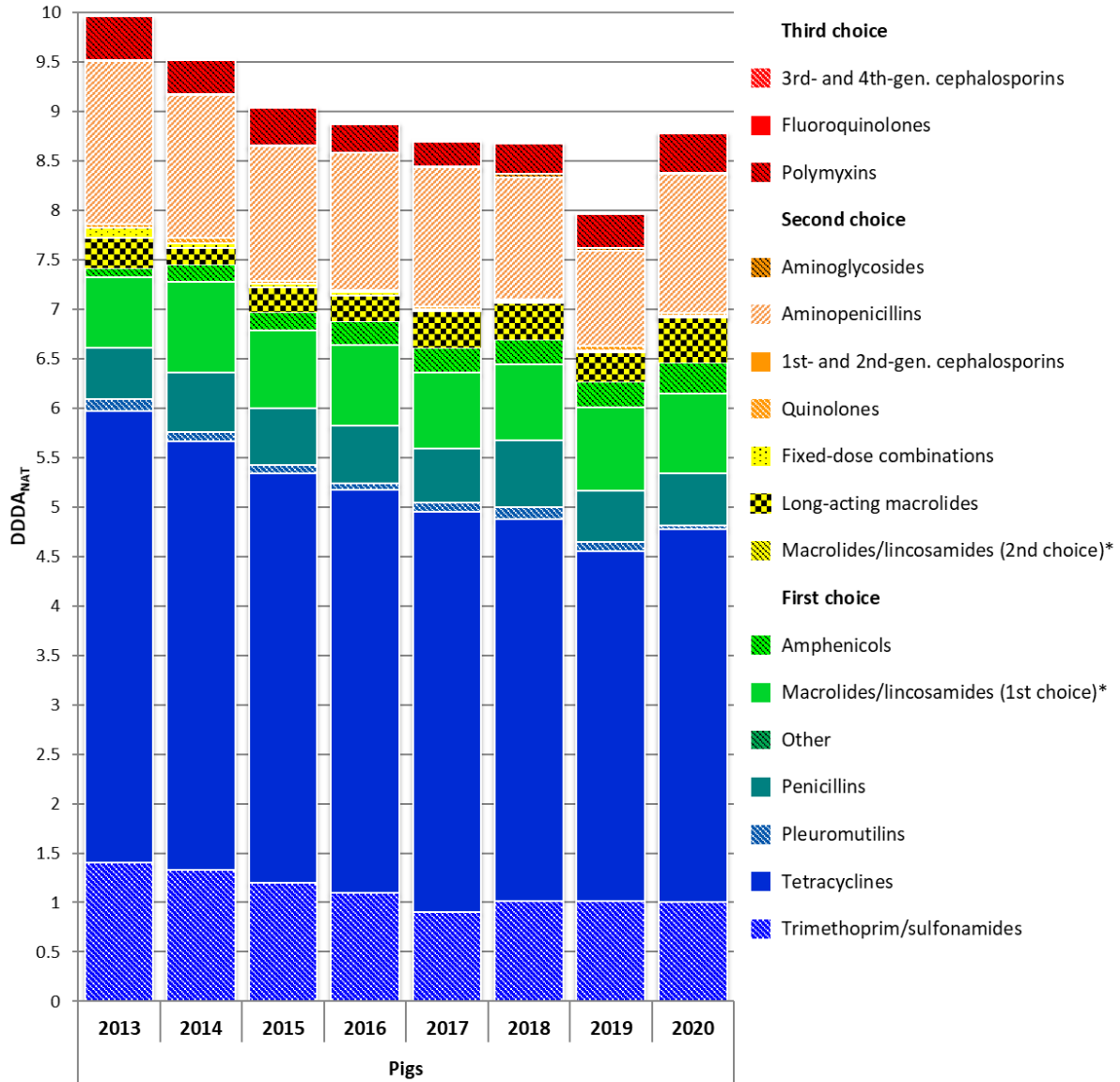
Table A30. Antibiotic use in  $DDDA_F$  at grandparent stock production farms in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with $DDDA_F=0$ | $DDDA_F$ |      |      |
|--------|---------------------------|-------------------------|----------------------------|----------|------|------|
|        |                           |                         |                            | Median   | P75  | Mean |
| 1      | Penicillins               | Oral                    | 20                         | 0.00     | 0.00 | 0.06 |
| 1      | Pleuromutilins            | Oral                    | 20                         | 0.00     | 0.00 | 0.24 |
| 1      | Tetracyclines             | Oral                    | 20                         | 0.00     | 0.00 | 0.96 |
| 1      | Trimethoprim/sulfonamides | Oral                    | 17                         | 0.00     | 0.00 | 1.48 |
| 2      | Macrolides/lincosamides   | Oral                    | 19                         | 0.00     | 0.00 | 1.46 |

## Pig farming sector

### 1. Antibiotic use in DDDA<sub>NAT</sub>

Figure B17. DDDA<sub>NAT</sub> trends in the pig farming sector over the 2013-2020 period, by pharmacotherapeutic group



\* In the poultry farming sector, all macrolides/lincosamides (with the exception of 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<sub>F</sub>

### 2.1 Farms with sows and suckling piglets

Number of farms: 1,572

Number of farms with DDDA<sub>F</sub>=0: 98 (6.2%)

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

Number of farms that used fluoroquinolones: 6 (0.4%)

Number of farms that used polymyxins: 484 (30.8%)

Table A31. Antibiotic use in DDDA<sub>F</sub> at farms with sows and suckling piglets from 2015 to 2020\*

| 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  |

\* Only years for which similar DDDA<sub>F</sub> calculation methods were used have been included.

Figure B18. 2015, 2019 and 2020 DDDA<sub>F</sub> distributions for farms with sows and suckling piglets

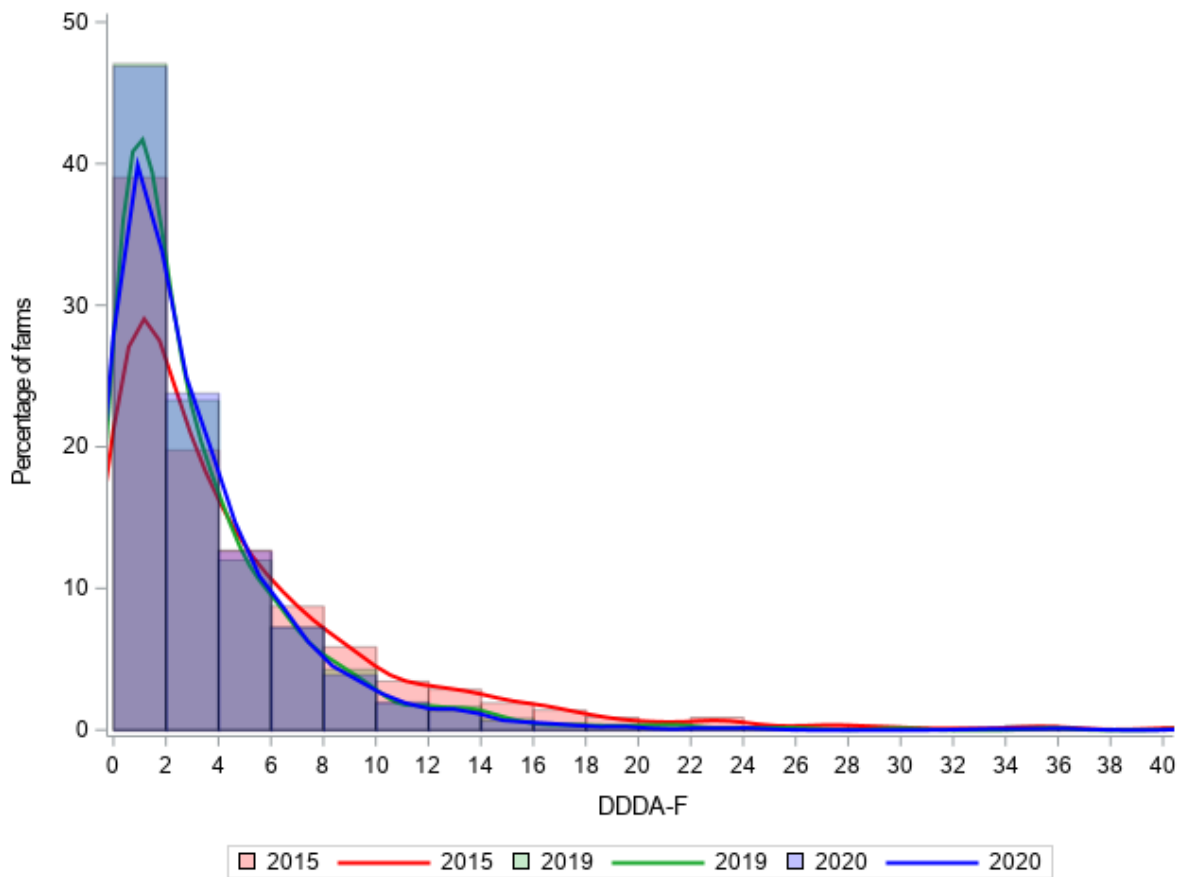


Figure B19. Scatter plot of 2018 and 2019 DDDA<sub>F</sub> values for farms with sows and suckling piglets. The red solid lines represent the action thresholds defined by the SDa. The red dotted line represents the transitional action threshold negotiated by the livestock sector. For each type of action threshold, the number of farms with persistently high usage levels is listed in the upper-right corner of the scatter plot

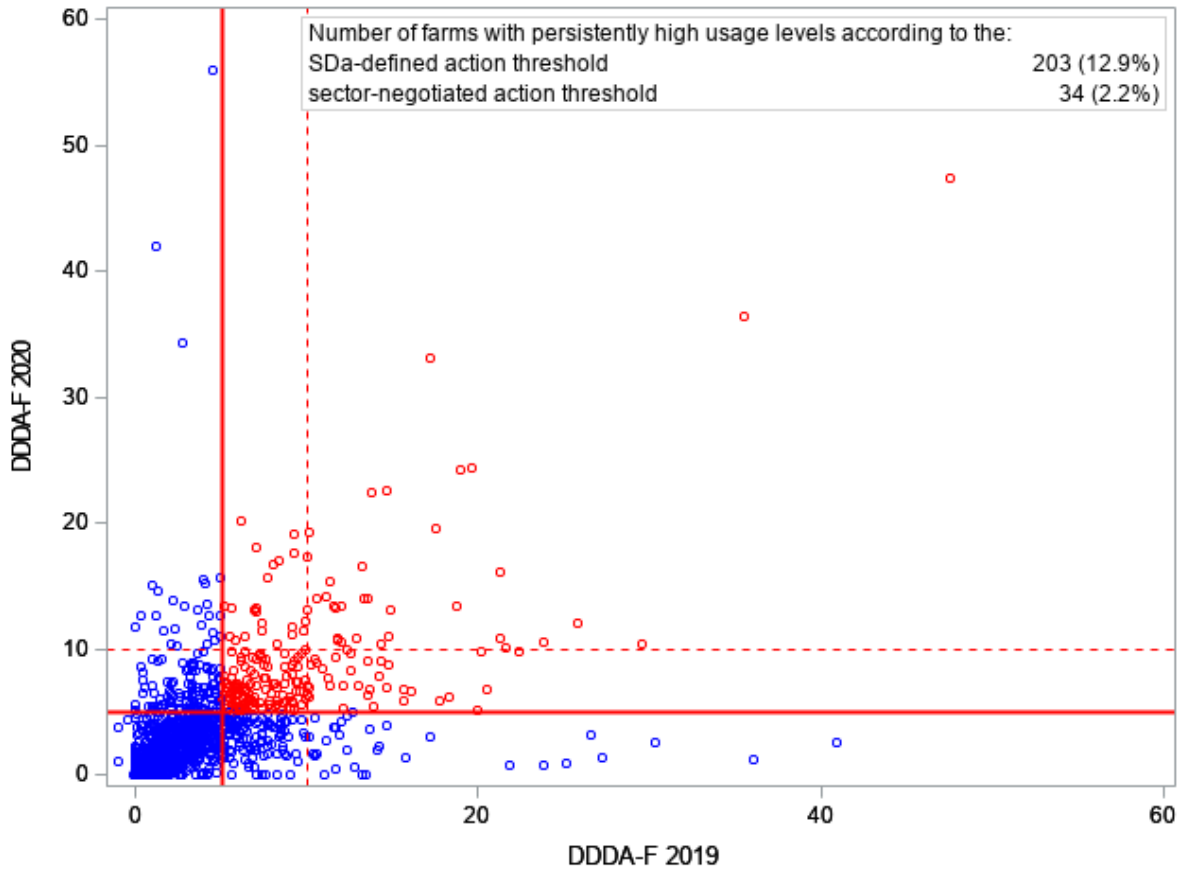


Table A32. Antibiotic use in DDDA<sub>F</sub> at farms with sows and suckling piglets in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |      |      |
|--------|---------------------------|-------------------------|--------------------------------------|-------------------|------|------|
|        |                           |                         |                                      | Median            | P75  | Mean |
| 1      | Amphenicols               | Parenteral              | 1,083                                | 0.00              | 0.11 | 0.25 |
| 1      | Macrolides/lincosamides   | Oral                    | 1,447                                | 0.00              | 0.00 | 0.12 |
| 1      | Macrolides/lincosamides   | Parenteral              | 1,368                                | 0.00              | 0.00 | 0.03 |
| 1      | Penicillins               | Parenteral              | 291                                  | 0.42              | 1.09 | 0.82 |
| 1      | Pleuromutilins            | Oral                    | 1,565                                | 0.00              | 0.00 | 0.00 |
| 1      | Pleuromutilins            | Parenteral              | 1,520                                | 0.00              | 0.00 | 0.01 |
| 1      | Tetracyclines             | Oral                    | 1,262                                | 0.00              | 0.00 | 0.57 |
| 1      | Tetracyclines             | Parenteral              | 653                                  | 0.05              | 0.41 | 0.44 |
| 1      | Tetracyclines             | Intra-                  | 1,571                                | 0.00              | 0.00 | 0.00 |
| 1      | Trimethoprim/sulfonamides | Oral                    | 1,336                                | 0.00              | 0.00 | 0.19 |
| 1      | Trimethoprim/sulfonamides | Parenteral              | 598                                  | 0.06              | 0.29 | 0.24 |
| 2      | Aminoglycosides           | Oral                    | 1,492                                | 0.00              | 0.00 | 0.01 |
| 2      | Aminopenicillins          | Oral                    | 1,456                                | 0.00              | 0.00 | 0.07 |
| 2      | Aminopenicillins          | Parenteral              | 791                                  | 0.00              | 0.31 | 0.24 |
| 2      | Quinolones                | Oral                    | 1,551                                | 0.00              | 0.00 | 0.04 |
| 2      | Fixed-dose combinations   | Parenteral              | 1,412                                | 0.00              | 0.00 | 0.02 |
| 2      | Long-acting macrolides    | Parenteral              | 1,202                                | 0.00              | 0.00 | 0.39 |
| 2      | Macrolides/lincosamides   | Parenteral              | 1,510                                | 0.00              | 0.00 | 0.05 |
| 2      | Penicillins               | Oral                    | 1,571                                | 0.00              | 0.00 | 0.00 |
| 3      | Fluoroquinolones          | Parenteral              | 1,566                                | 0.00              | 0.00 | 0.00 |
| 3      | Polymyxins                | Oral                    | 1,469                                | 0.00              | 0.00 | 0.03 |
| 3      | Polymyxins                | Parenteral              | 1,125                                | 0.00              | 0.02 | 0.05 |

**2.2 Farms with weaner pigs**

Number of farms: 1,759

Number of farms with DDDA<sub>F</sub>=0: 269 (15.3%)

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

Number of farms that used fluoroquinolones: 2 (0.1%)

Number of farms that used polymyxins: 504 (28.7%)

Table A33. Antibiotic use in DDDA<sub>F</sub> at farms with weaner pigs from 2015 to 2020\*

| 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 |

\* Only years for which similar DDDA<sub>F</sub> calculation methods were used have been included.

Figure B20. 2015, 2019 and 2020 DDDA<sub>F</sub> distributions for farms with weaner pigs

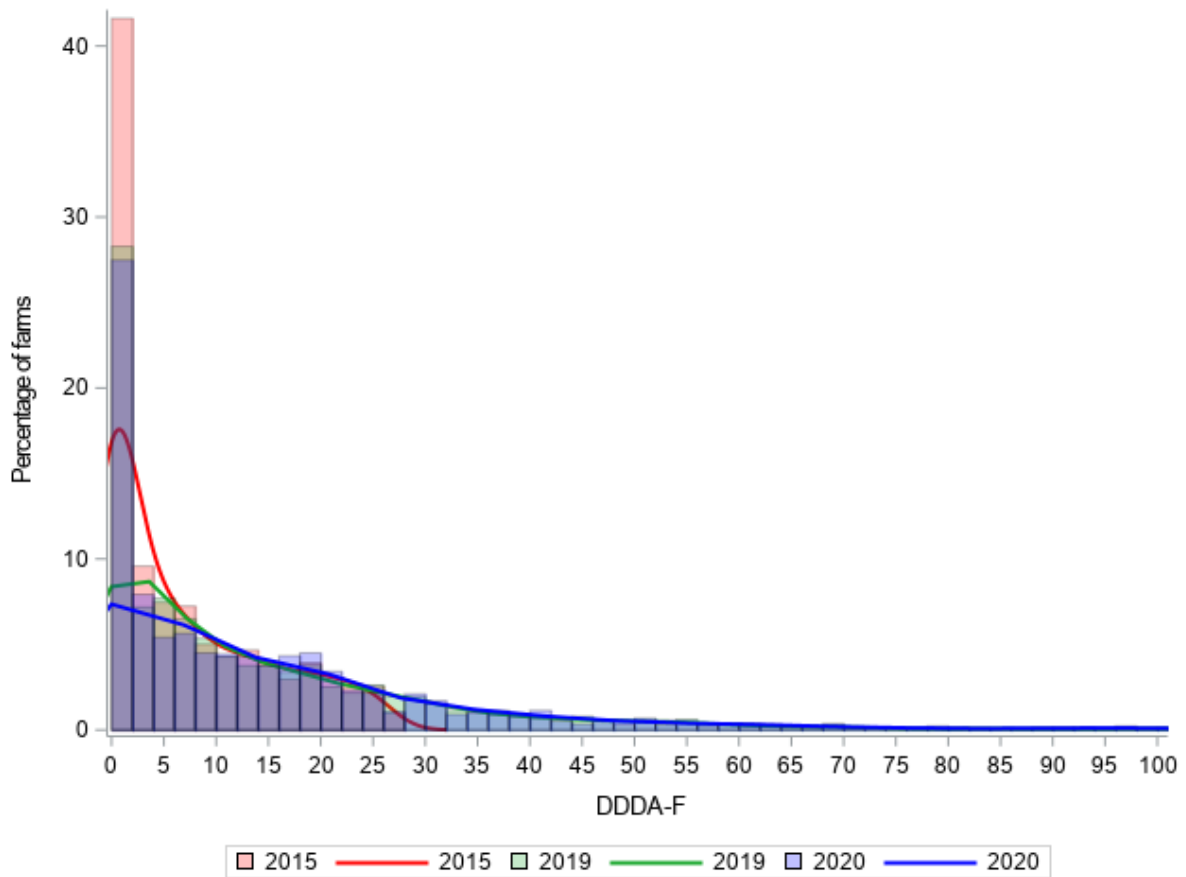


Figure B21. Scatter plot of 2019 and 2020 DDDA<sub>F</sub> values for farms with weaner pigs. The red solid lines represent the action thresholds defined by the SDa. The number of farms with structurally high usage levels (farms whose usage levels exceeded the action threshold in both years) is listed in the upper-right corner of the scatter plot

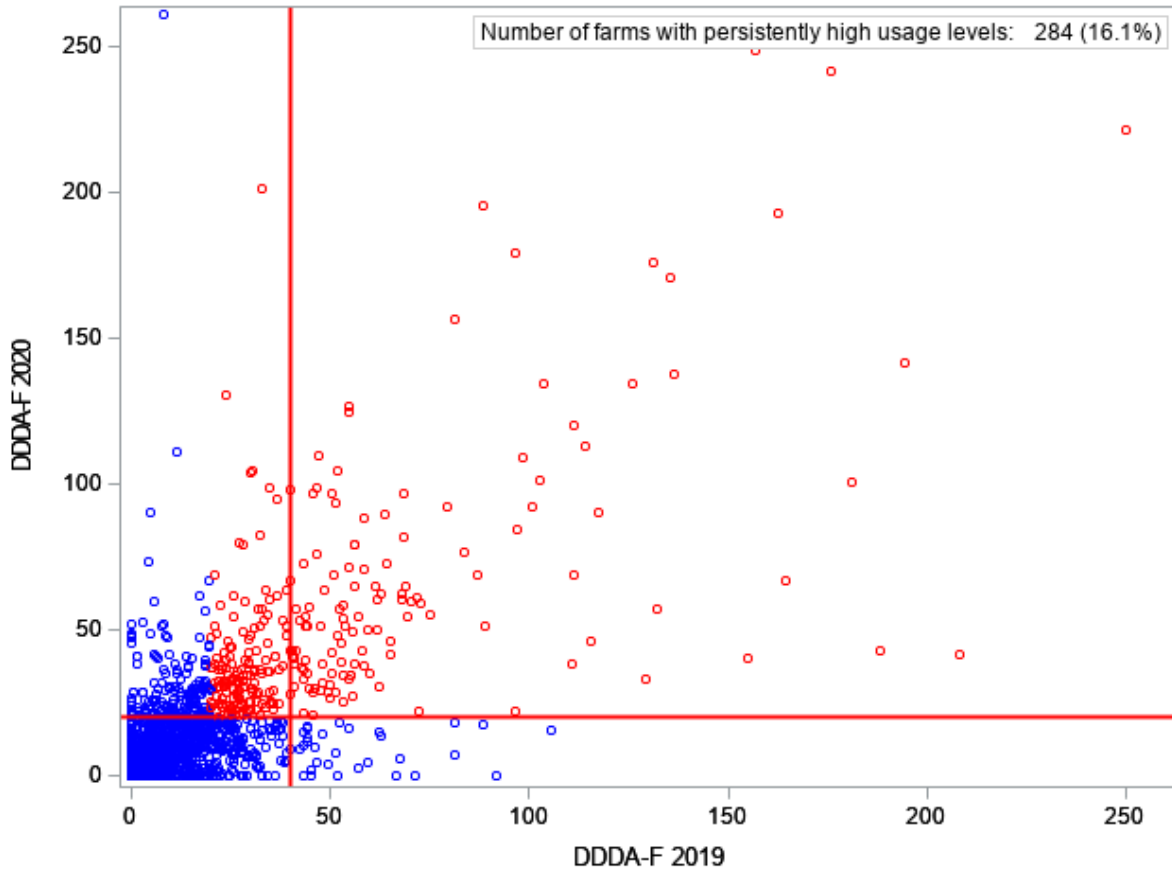


Table A34. Antibiotic use in DDDA<sub>F</sub> at farms with weaner pigs in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |      |      |
|--------|---------------------------|-------------------------|--------------------------------------|-------------------|------|------|
|        |                           |                         |                                      | Median            | P75  | Mean |
| 1      | Amphenicols               | Parenteral              | 1,419                                | 0.00              | 0.00 | 0.35 |
| 1      | Macrolides/lincosamides   | Oral                    | 1,563                                | 0.00              | 0.00 | 0.64 |
| 1      | Macrolides/lincosamides   | Parenteral              | 1,694                                | 0.00              | 0.00 | 0.02 |
| 1      | Penicillins               | Parenteral              | 1,052                                | 0.00              | 0.50 | 0.62 |
| 1      | Pleuromutilins            | Oral                    | 1,741                                | 0.00              | 0.00 | 0.05 |
| 1      | Pleuromutilins            | Parenteral              | 1,736                                | 0.00              | 0.00 | 0.01 |
| 1      | Tetracyclines             | Oral                    | 1,011                                | 0.00              | 6.35 | 6.72 |
| 1      | Tetracyclines             | Parenteral              | 1,334                                | 0.00              | 0.00 | 0.52 |
| 1      | Trimethoprim/sulfonamides | Oral                    | 1,150                                | 0.00              | 1.98 | 2.96 |
| 1      | Trimethoprim/sulfonamides | Parenteral              | 1,550                                | 0.00              | 0.00 | 0.07 |
| 2      | Aminoglycosides           | Oral                    | 1,705                                | 0.00              | 0.00 | 0.09 |
| 2      | Aminopenicillins          | Oral                    | 1,289                                | 0.00              | 1.59 | 4.83 |
| 2      | Aminopenicillins          | Parenteral              | 1,138                                | 0.00              | 0.28 | 0.51 |
| 2      | Quinolones                | Oral                    | 1,747                                | 0.00              | 0.00 | 0.02 |
| 2      | Fixed-dose combinations   | Parenteral              | 1,670                                | 0.00              | 0.00 | 0.03 |
| 2      | Long-acting macrolides    | Parenteral              | 1,424                                | 0.00              | 0.00 | 0.99 |
| 2      | Macrolides/lincosamides   | Parenteral              | 1,679                                | 0.00              | 0.00 | 0.21 |
| 3      | Fluoroquinolones          | Parenteral              | 1,757                                | 0.00              | 0.00 | 0.00 |
| 3      | Polymyxins                | Oral                    | 1,382                                | 0.00              | 0.00 | 1.72 |
| 3      | Polymyxins                | Parenteral              | 1,471                                | 0.00              | 0.00 | 0.19 |



### 2.3 Farms with fattening pigs

Number of farms: 3,650

Number of farms with  $DDDA_F=0$ : 1,129 (30.9%)

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: 98 (2.7%)

Table A35. Antibiotic use in  $DDDA_F$  at farms with fattening pigs from 2015 to 2020\*

| 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  |

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

Figure B22. 2015, 2019 and 2020  $DDDA_F$  distributions for farms with fattening pigs

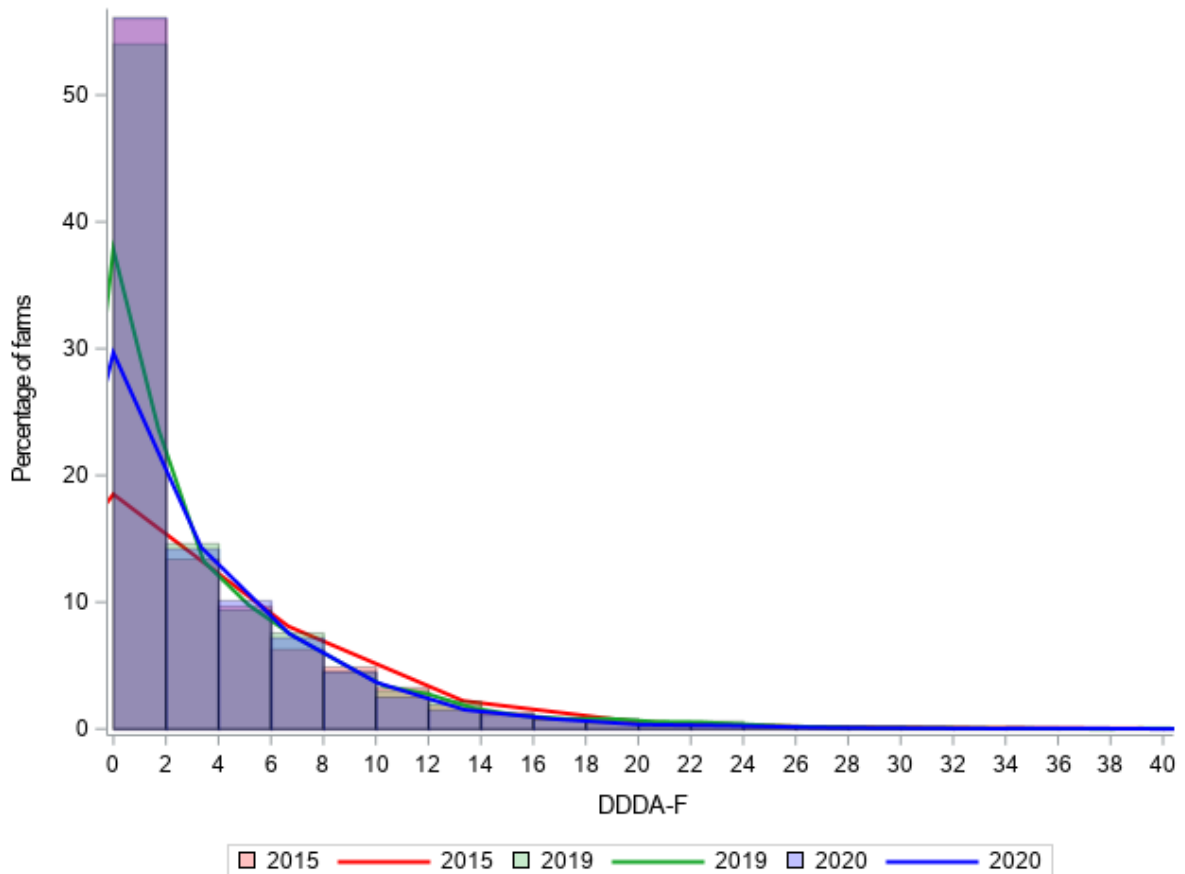


Figure B23. Scatter plot of 2019 and 2020 DDDA<sub>F</sub> values for farms with fattening pigs. The red solid lines represent the action thresholds defined by the SDa. The red dotted line represents the transitional action threshold negotiated by the livestock sector. For each type of action threshold, the number of farms with persistently high usage levels is listed in the upper-right corner of the scatter plot

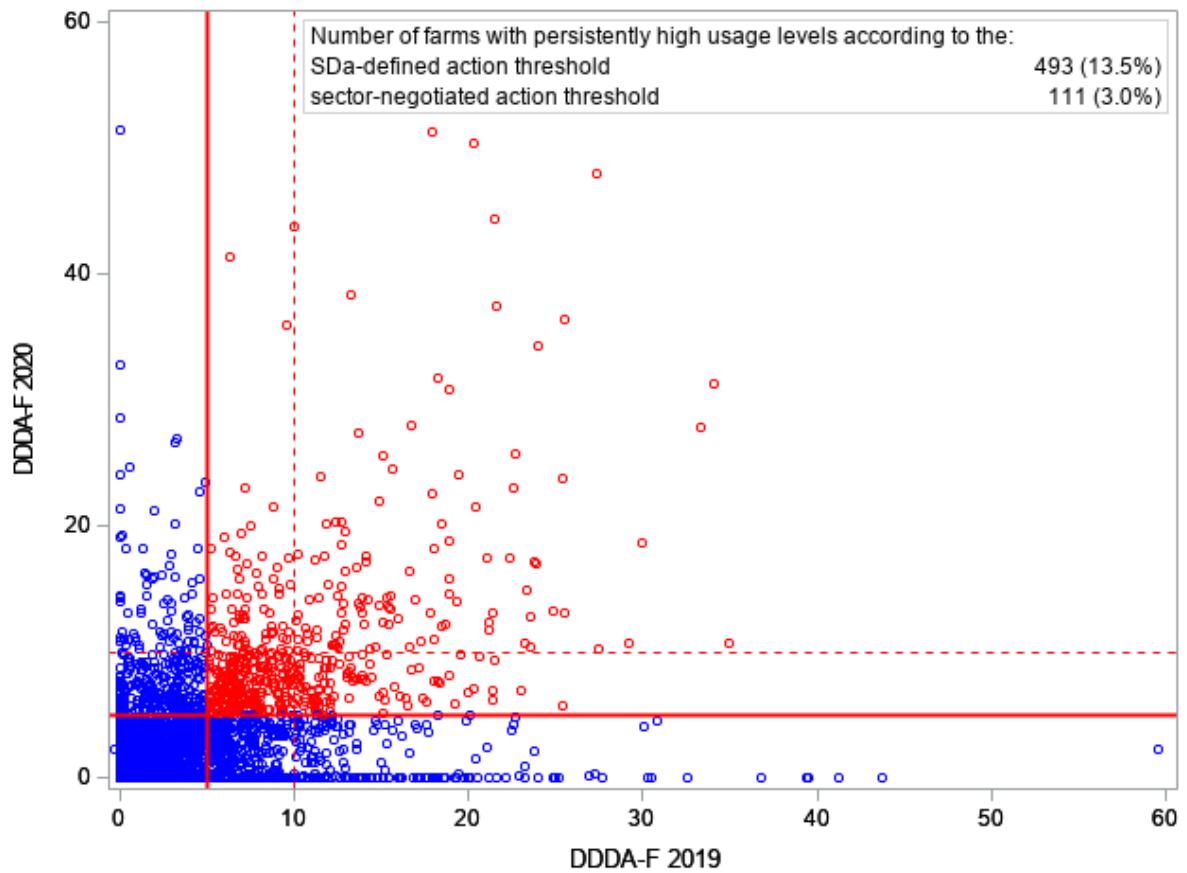


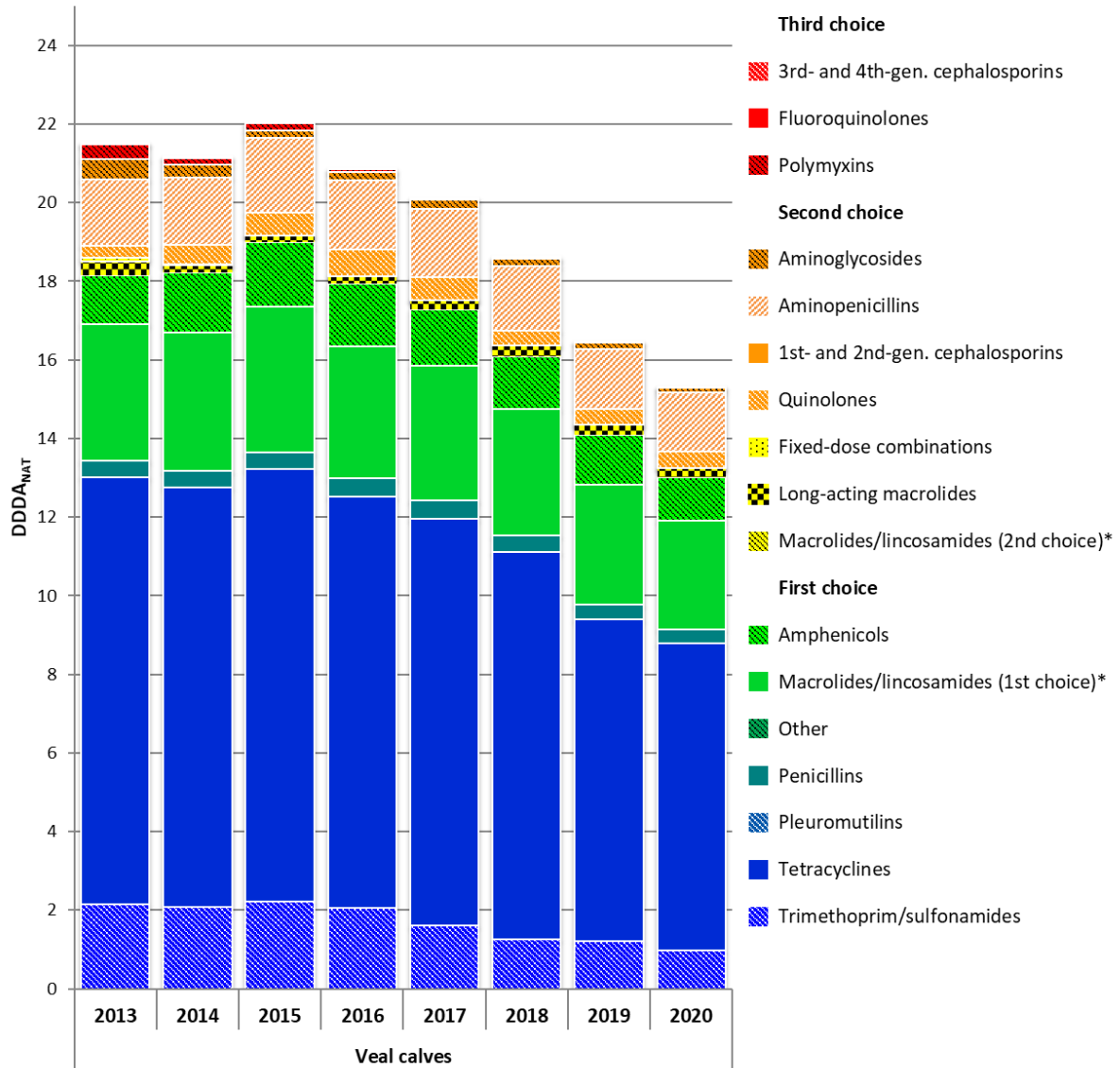
Table A36. Antibiotic use in DDDA<sub>F</sub> at farms with fattening pigs in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |      |      |
|--------|---------------------------|-------------------------|--------------------------------------|-------------------|------|------|
|        |                           |                         |                                      | Median            | P75  | Mean |
| 1      | Amphenicols               | Parenteral              | 2.641                                | 0,00              | 0,05 | 0,17 |
| 1      | Macrolides/lincosamides   | Oral                    | 2.713                                | 0,00              | 0,18 | 0,64 |
| 1      | Macrolides/lincosamides   | Parenteral              | 2.979                                | 0,00              | 0,00 | 0,02 |
| 1      | Penicillins               | Parenteral              | 1.642                                | 0,04              | 0,26 | 0,25 |
| 1      | Pleuromutilins            | Oral                    | 3.588                                | 0,00              | 0,00 | 0,03 |
| 1      | Pleuromutilins            | Parenteral              | 3.503                                | 0,00              | 0,00 | 0,00 |
| 1      | Tetracyclines             | Oral                    | 2.236                                | 0,00              | 1,79 | 1,79 |
| 1      | Tetracyclines             | Parenteral              | 2.262                                | 0,00              | 0,10 | 0,18 |
| 1      | Trimethoprim/sulfonamides | Oral                    | 2.981                                | 0,00              | 0,00 | 0,30 |
| 1      | Trimethoprim/sulfonamides | Parenteral              | 3.590                                | 0,00              | 0,00 | 0,00 |
| 2      | Aminoglycosides           | Oral                    | 3.643                                | 0,00              | 0,00 | 0,00 |
| 2      | Aminopenicillins          | Oral                    | 3.515                                | 0,00              | 0,00 | 0,07 |
| 2      | Aminopenicillins          | Parenteral              | 3.237                                | 0,00              | 0,00 | 0,02 |
| 2      | Quinolones                | Oral                    | 3.638                                | 0,00              | 0,00 | 0,00 |
| 2      | Fixed-dose combinations   | Parenteral              | 3.582                                | 0,00              | 0,00 | 0,00 |
| 2      | Long-acting macrolides    | Parenteral              | 3.587                                | 0,00              | 0,00 | 0,02 |
| 2      | Macrolides/lincosamides   | Parenteral              | 3.638                                | 0,00              | 0,00 | 0,00 |
| 3      | Fluoroquinolones          | Parenteral              | 3.649                                | 0,00              | 0,00 | 0,00 |
| 3      | Polymyxins                | Oral                    | 3.601                                | 0,00              | 0,00 | 0,01 |
| 3      | Polymyxins                | Parenteral              | 3.589                                | 0,00              | 0,00 | 0,00 |

## Veal farming sector

### 1. Antibiotic use in DDDA<sub>NAT</sub>

Figure B24. DDDA<sub>NAT</sub> trends in the veal farming sector over the 2013-2020 period, by pharmacotherapeutic group



\* In the poultry farming sector, all macrolides/lincosamides (with the exception of 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<sub>F</sub>

### 2.1 White veal farms

Number of farms: 813

Number of farms with DDDA<sub>F</sub> = 0: 1 (0.1%)

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

Number of farms that used fluoroquinolones: 86 (10.6%)

Number of farms that used polymyxins: 55 (6.8%)

Table A37. Antibiotic use in DDDA<sub>F</sub> at white veal farms from 2011 to 2020\*

| 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 |

\* Only years for which similar DDDA<sub>F</sub> calculation methods were used have been included.

Figure B25. 2012, 2019 and 2020 DDDA<sub>F</sub> distributions for white veal farms

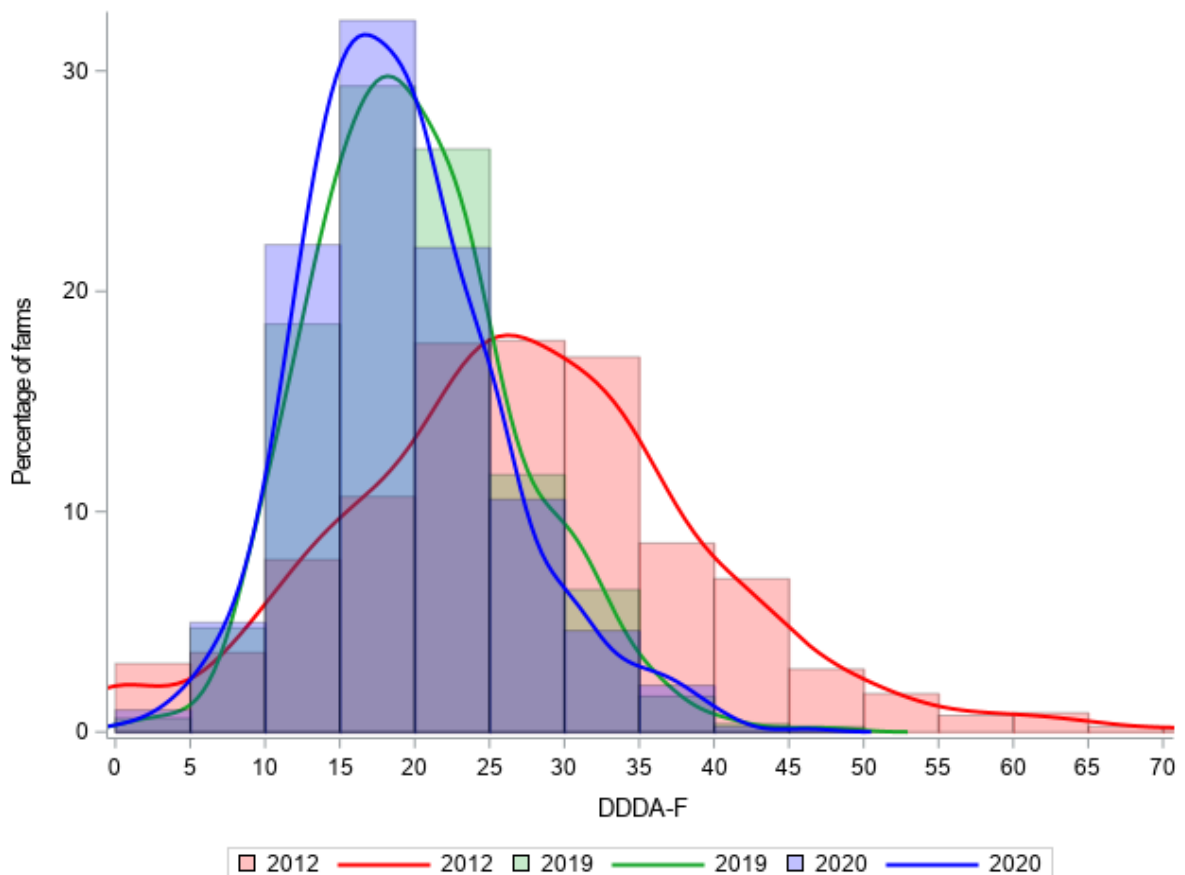


Figure B26. Scatter plot of 2019 and 2020 DDDA<sub>F</sub> values for white veal farms. The red solid lines represent the action thresholds defined by the SDa. The number of farms with structurally high usage levels (farms whose usage levels exceeded the action threshold in both years) is listed in the upper-right corner of the scatter plot

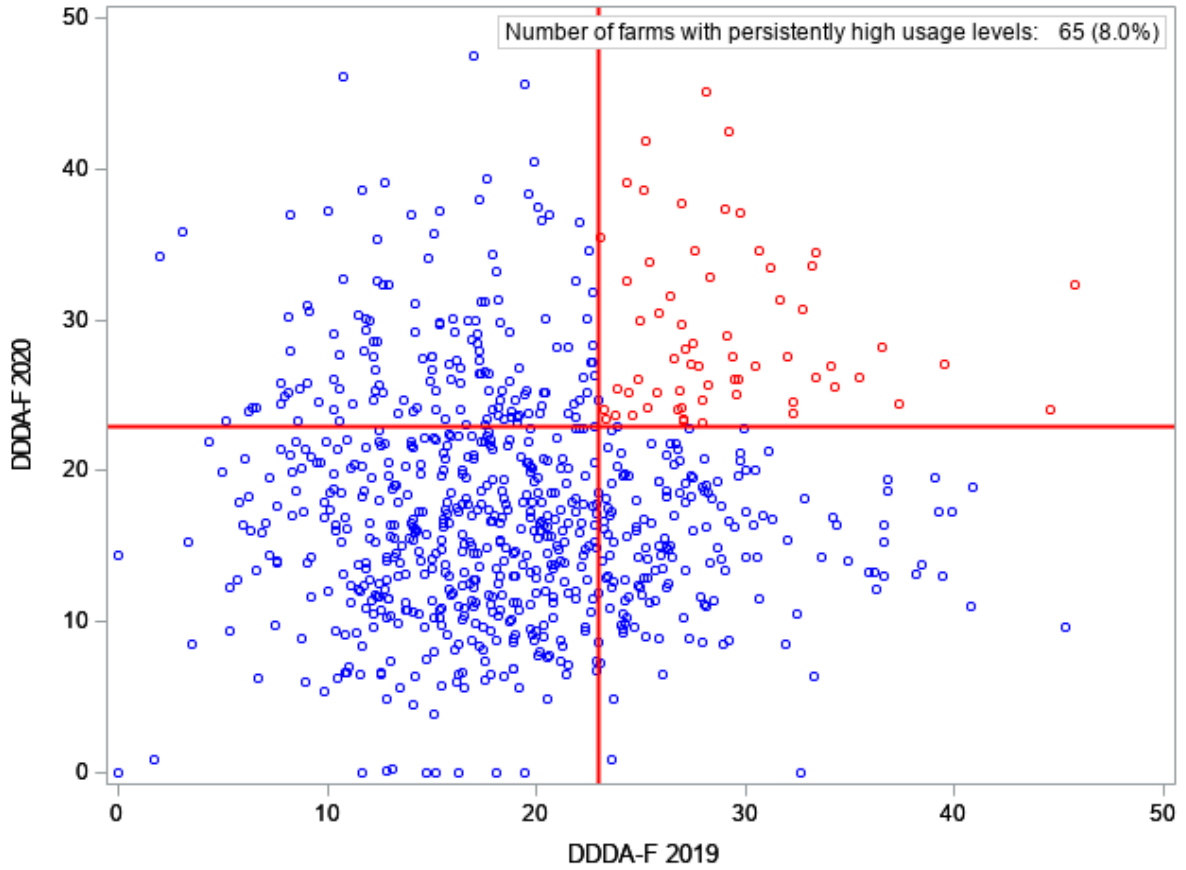


Table A38. Antibiotic use in DDDA<sub>F</sub> at white veal farms in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration          | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |       |      |
|--------|---------------------------|----------------------------------|--------------------------------------|-------------------|-------|------|
|        |                           |                                  |                                      | Median            | P75   | Mean |
| 1      | Amphenicols               | Parenteral                       | 6                                    | 0.88              | 1.37  | 1.03 |
| 1      | Macrolides/lincosamides   | Oral                             | 24                                   | 3.29              | 4.28  | 3.41 |
| 1      | Macrolides/lincosamides   | Parenteral                       | 274                                  | 0.01              | 0.07  | 0.09 |
| 1      | Penicillins               | Intramammary for dry cow therapy | 812                                  | 0.00              | 0.00  | 0.00 |
| 1      | Penicillins               | Parenteral                       | 32                                   | 0.34              | 0.57  | 0.43 |
| 1      | Tetracyclines             | Intrauterine                     | 812                                  | 0.00              | 0.00  | 0.00 |
| 1      | Tetracyclines             | Oral                             | 5                                    | 9.49              | 12.31 | 9.99 |
| 1      | Tetracyclines             | Parenteral                       | 559                                  | 0.00              | 0.01  | 0.02 |
| 1      | Trimethoprim/sulfonamides | Oral                             | 448                                  | 0.00              | 1.28  | 0.93 |
| 1      | Trimethoprim/sulfonamides | Parenteral                       | 201                                  | 0.03              | 0.08  | 0.06 |
| 2      | Aminoglycosides           | Oral                             | 337                                  | 0.01              | 0.05  | 0.10 |
| 2      | Aminoglycosides           | Parenteral                       | 474                                  | 0.00              | 0.06  | 0.06 |
| 2      | Aminopenicillins          | Oral                             | 274                                  | 0.55              | 3.24  | 1.97 |
| 2      | Aminopenicillins          | Parenteral                       | 117                                  | 0.09              | 0.17  | 0.12 |
| 2      | Quinolones                | Oral                             | 627                                  | 0.00              | 0.00  | 0.60 |
| 2      | Fixed-dose combinations   | Parenteral                       | 784                                  | 0.00              | 0.00  | 0.00 |
| 2      | Long-acting macrolides    | Parenteral                       | 205                                  | 0.16              | 0.35  | 0.24 |
| 3      | Fluoroquinolones          | Oral                             | 803                                  | 0.00              | 0.00  | 0.01 |
| 3      | Fluoroquinolones          | Parenteral                       | 733                                  | 0.00              | 0.00  | 0.01 |
| 3      | Polymyxins                | Oral                             | 800                                  | 0.00              | 0.00  | 0.02 |
| 3      | Polymyxins                | Parenteral                       | 765                                  | 0.00              | 0.00  | 0.00 |

### 2.2 Rosé veal starter farms

Number of farms: 197

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: 13 (6.6%)

Number of farms that used polymyxins: 5 (2.5%)

Table A39. Antibiotic use in  $DDDA_F$  at rosé veal starter farms from 2011 to 2020\*

| 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   | 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  |

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

Figure B27. 2012, 2019 and 2020  $DDDA_F$  distributions for rosé veal starter farms

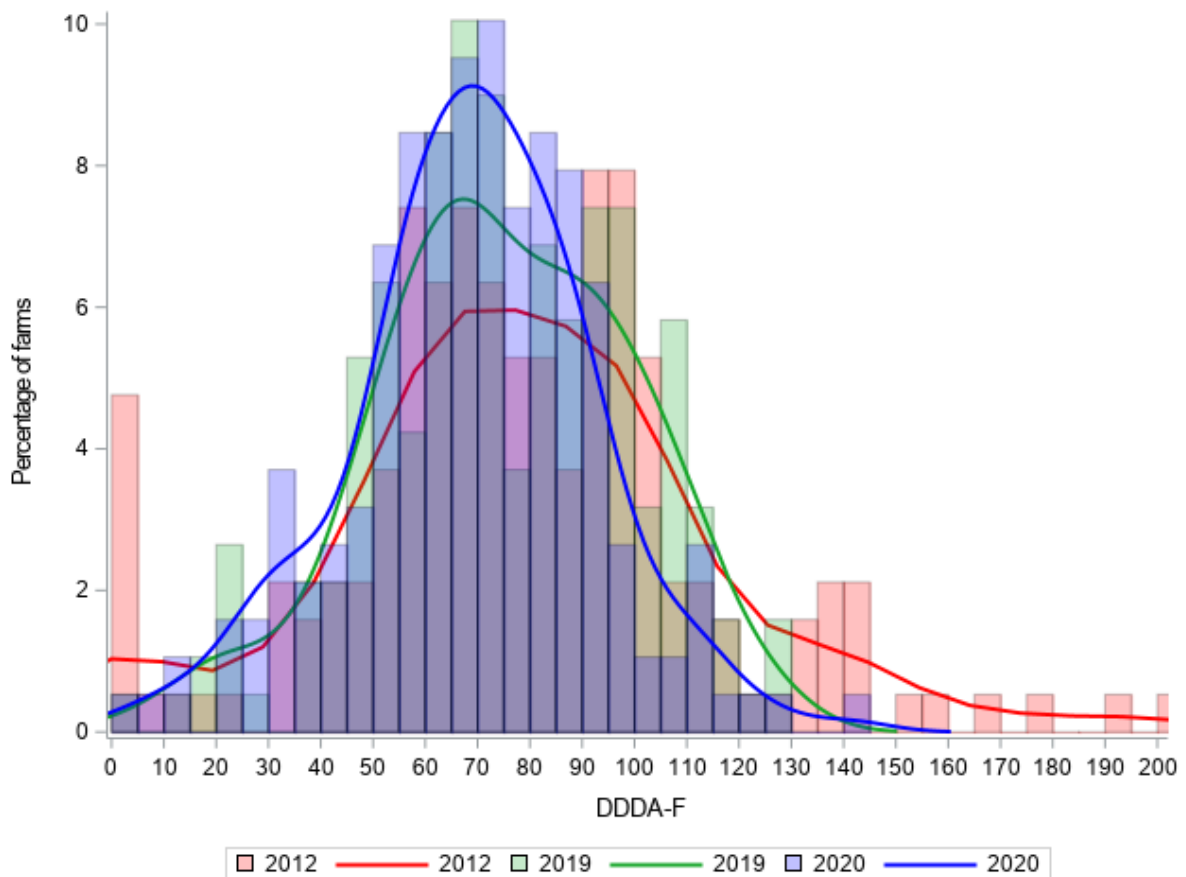




Figure B28. Scatter plot of 2019 and 2020 DDDA<sub>F</sub> values for rosé veal starter farms. The red solid lines represent the action thresholds defined by the SDa. The number of farms with persistently high usage levels (farms whose usage levels exceeded the action threshold in both years) is listed in the upper-right corner of the scatter plot

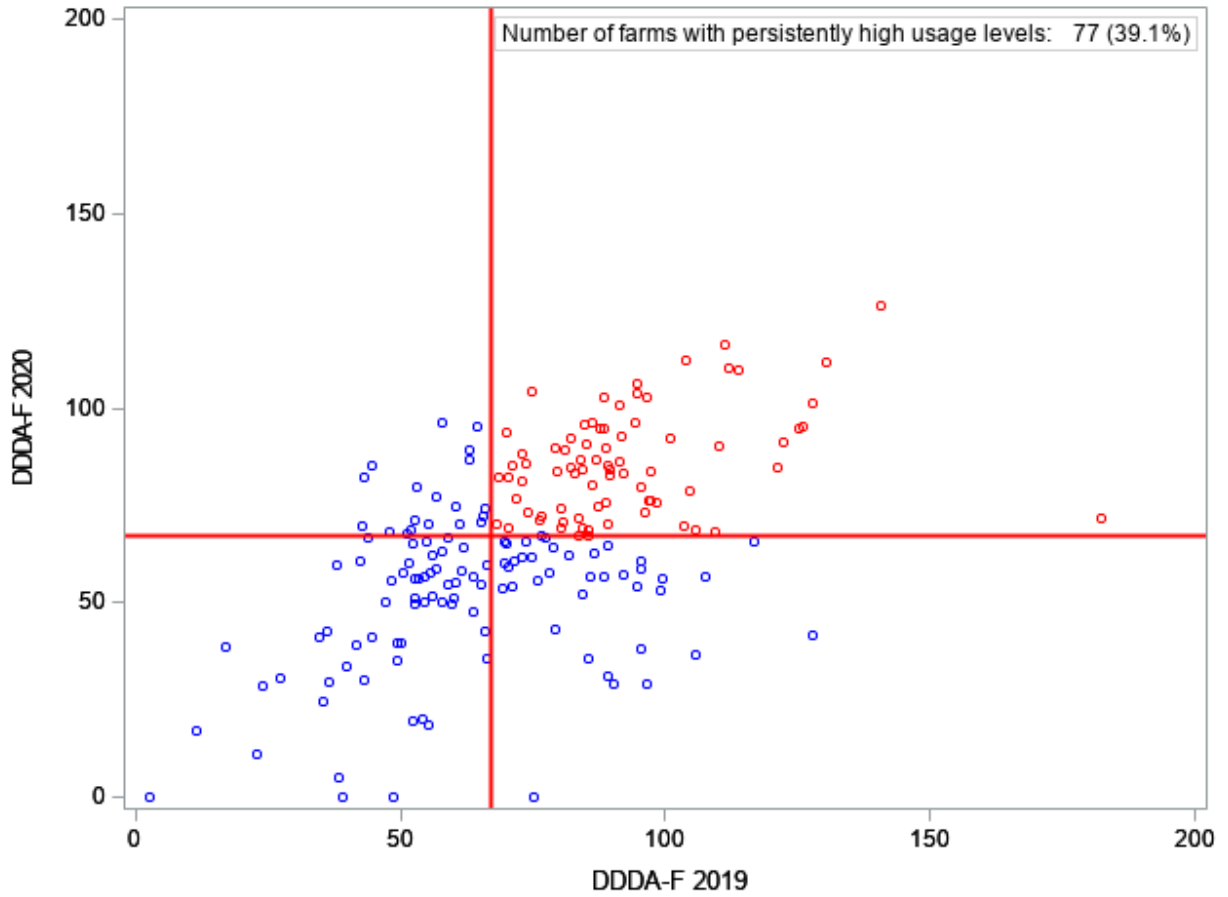


Table A40. Antibiotic use in DDDA<sub>F</sub> at rosé veal starter farms in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |       |       |
|--------|---------------------------|-------------------------|--------------------------------------|-------------------|-------|-------|
|        |                           |                         |                                      | Median            | P75   | Mean  |
| 1      | Amphenicols               | Parenteral              | 1                                    | 5.33              | 8.46  | 6.51  |
| 1      | Macrolides/lincosamides   | Oral                    | 13                                   | 16.06             | 20.15 | 15.29 |
| 1      | Macrolides/lincosamides   | Parenteral              | 52                                   | 0.13              | 0.39  | 0.41  |
| 1      | Penicillins               | Parenteral              | 11                                   | 1.16              | 2.21  | 1.56  |
| 1      | Tetracyclines             | Oral                    | 2                                    | 34.35             | 43.79 | 33.98 |
| 1      | Tetracyclines             | Parenteral              | 152                                  | 0.00              | 0.00  | 0.17  |
| 1      | Trimethoprim/sulfonamides | Oral                    | 64                                   | 2.82              | 10.07 | 6.05  |
| 1      | Trimethoprim/sulfonamides | Parenteral              | 59                                   | 0.10              | 0.38  | 0.35  |
| 2      | Aminoglycosides           | Oral                    | 113                                  | 0.00              | 0.13  | 0.40  |
| 2      | Aminoglycosides           | Parenteral              | 92                                   | 0.05              | 0.48  | 0.34  |
| 2      | Aminopenicillins          | Intramammary            | 196                                  | 0.00              | 0.00  | 0.00  |
| 2      | Aminopenicillins          | Oral                    | 118                                  | 0.00              | 1.59  | 1.71  |
| 2      | Aminopenicillins          | Parenteral              | 26                                   | 0.31              | 0.61  | 0.46  |
| 2      | Quinolones                | Oral                    | 160                                  | 0.00              | 0.00  | 0.71  |
| 2      | Fixed-dose combinations   | Parenteral              | 193                                  | 0.00              | 0.00  | 0.00  |
| 2      | Long-acting macrolides    | Parenteral              | 60                                   | 0.46              | 1.38  | 1.10  |
| 3      | Fluoroquinolones          | Oral                    | 195                                  | 0.00              | 0.00  | 0.01  |
| 3      | Fluoroquinolones          | Parenteral              | 185                                  | 0.00              | 0.00  | 0.01  |
| 3      | Polymyxins                | Oral                    | 196                                  | 0.00              | 0.00  | 0.08  |
| 3      | Polymyxins                | Parenteral              | 192                                  | 0.00              | 0.00  | 0.00  |

### 2.3 Rosé veal fattening farms

Number of farms: 680

Number of farms with  $DDDA_F = 0$ : 48 (7.1%)

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

Number of farms that used fluoroquinolones: 8 (1.2%)

Number of farms that used polymyxins: 7 (1.0%)

Table A41. Antibiotic use in  $DDDA_F$  at rosé veal fattening farms from 2011 to 2020\*

| 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 |

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

Figure B29. 2012, 2019 and 2020  $DDDA_F$  distributions for rosé veal fattening farms

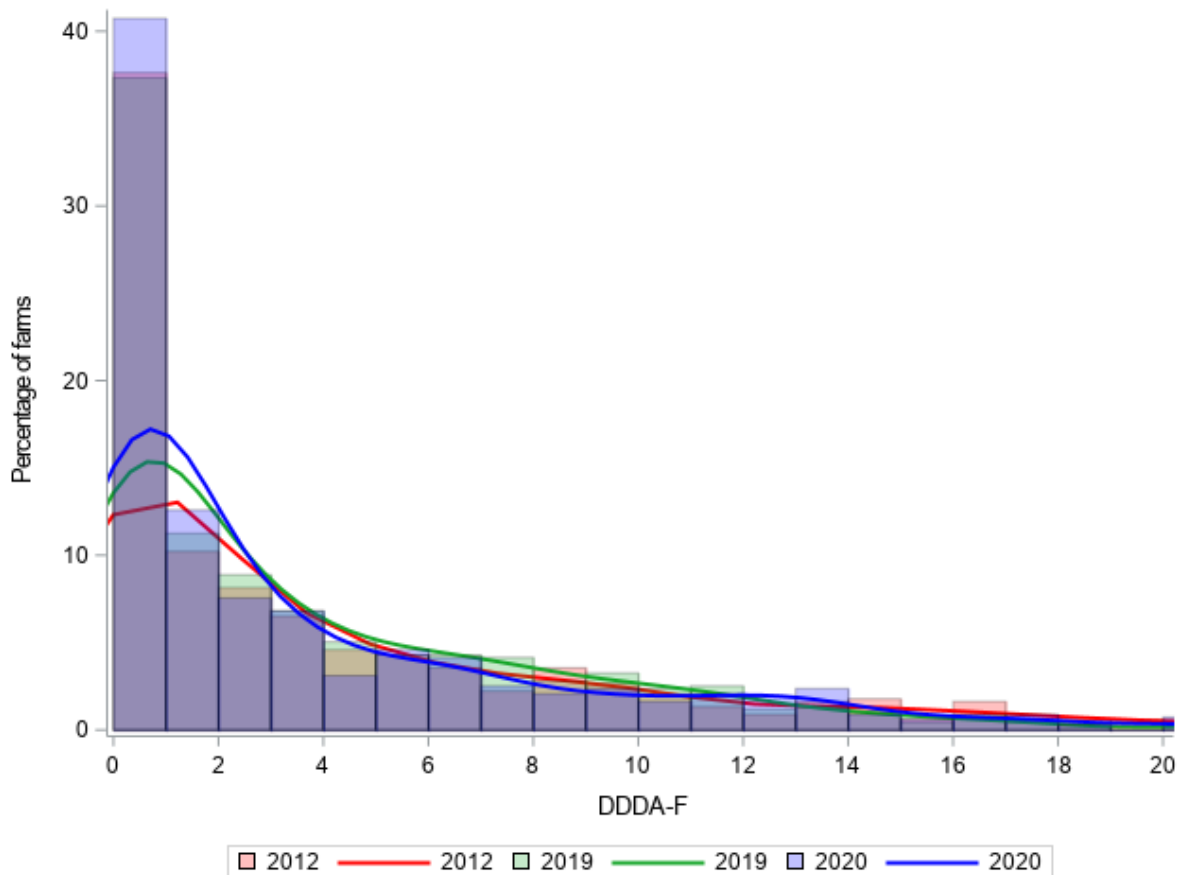


Figure B30. Scatter plot of 2019 and 2020 DDDA<sub>F</sub> values for rosé veal fattening farms. The red solid lines represent the action thresholds defined by the SDa. The number of farms with persistently high usage levels (farms whose usage levels exceeded the action threshold in both years) is listed in the upper-right corner of the scatter plot

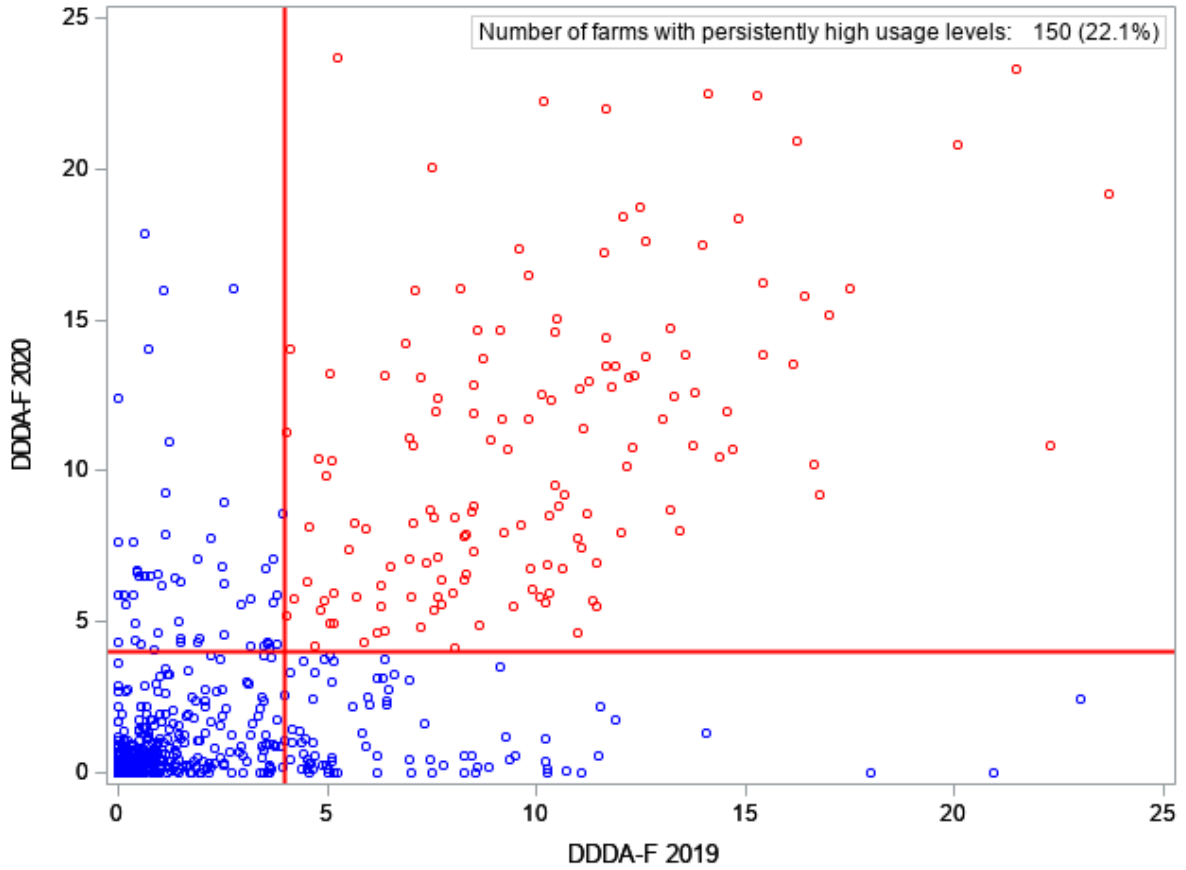


Table A42. Antibiotic use in DDDA<sub>F</sub> at rosé veal fattening farms in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |      |      |
|--------|---------------------------|-------------------------|--------------------------------------|-------------------|------|------|
|        |                           |                         |                                      | Median            | P75  | Mean |
| 1      | Amphenicols               | Parenteral              | 103                                  | 0.36              | 0.70 | 0.58 |
| 1      | Macrolides/lincosamides   | Oral                    | 536                                  | 0.00              | 0.00 | 0.46 |
| 1      | Macrolides/lincosamides   | Parenteral              | 490                                  | 0.00              | 0.00 | 0.04 |
| 1      | Penicillins               | Parenteral              | 245                                  | 0.07              | 0.25 | 0.19 |
| 1      | Tetracyclines             | Oral                    | 352                                  | 0.00              | 3.23 | 2.08 |
| 1      | Tetracyclines             | Parenteral              | 575                                  | 0.00              | 0.00 | 0.02 |
| 1      | Trimethoprim/sulfonamides | Oral                    | 490                                  | 0.00              | 0.19 | 0.43 |
| 1      | Trimethoprim/sulfonamides | Parenteral              | 505                                  | 0.00              | 0.01 | 0.02 |
| 2      | Aminoglycosides           | Oral                    | 615                                  | 0.00              | 0.00 | 0.01 |
| 2      | Aminoglycosides           | Parenteral              | 621                                  | 0.00              | 0.00 | 0.01 |
| 2      | Aminopenicillins          | Oral                    | 626                                  | 0.00              | 0.00 | 0.05 |
| 2      | Aminopenicillins          | Parenteral              | 354                                  | 0.00              | 0.06 | 0.06 |
| 2      | Quinolones                | Oral                    | 667                                  | 0.00              | 0.00 | 0.01 |
| 2      | Fixed-dose combinations   | Parenteral              | 645                                  | 0.00              | 0.00 | 0.00 |
| 2      | Long-acting macrolides    | Parenteral              | 391                                  | 0.00              | 0.14 | 0.14 |
| 3      | Fluoroquinolones          | Oral                    | 679                                  | 0.00              | 0.00 | 0.00 |
| 3      | Fluoroquinolones          | Parenteral              | 672                                  | 0.00              | 0.00 | 0.00 |
| 3      | Polymyxins                | Parenteral              | 673                                  | 0.00              | 0.00 | 0.00 |

### 2.4 Rosé veal combination farms

Number of farms: 74

Number of farms with  $DDDA_F = 0$ : 2 (1.4%)

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

Number of farms that used fluoroquinolones: 10 (13.5%)

Number of farms that used polymyxins: 2 (2.7%)

Table A43. Antibiotic use in  $DDDA_F$  at rosé veal combination farms from 2011 to 2020\*

| 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 |

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

Figure B31. 2012, 2019 and 2020  $DDDA_F$  distributions for rosé veal combination farms

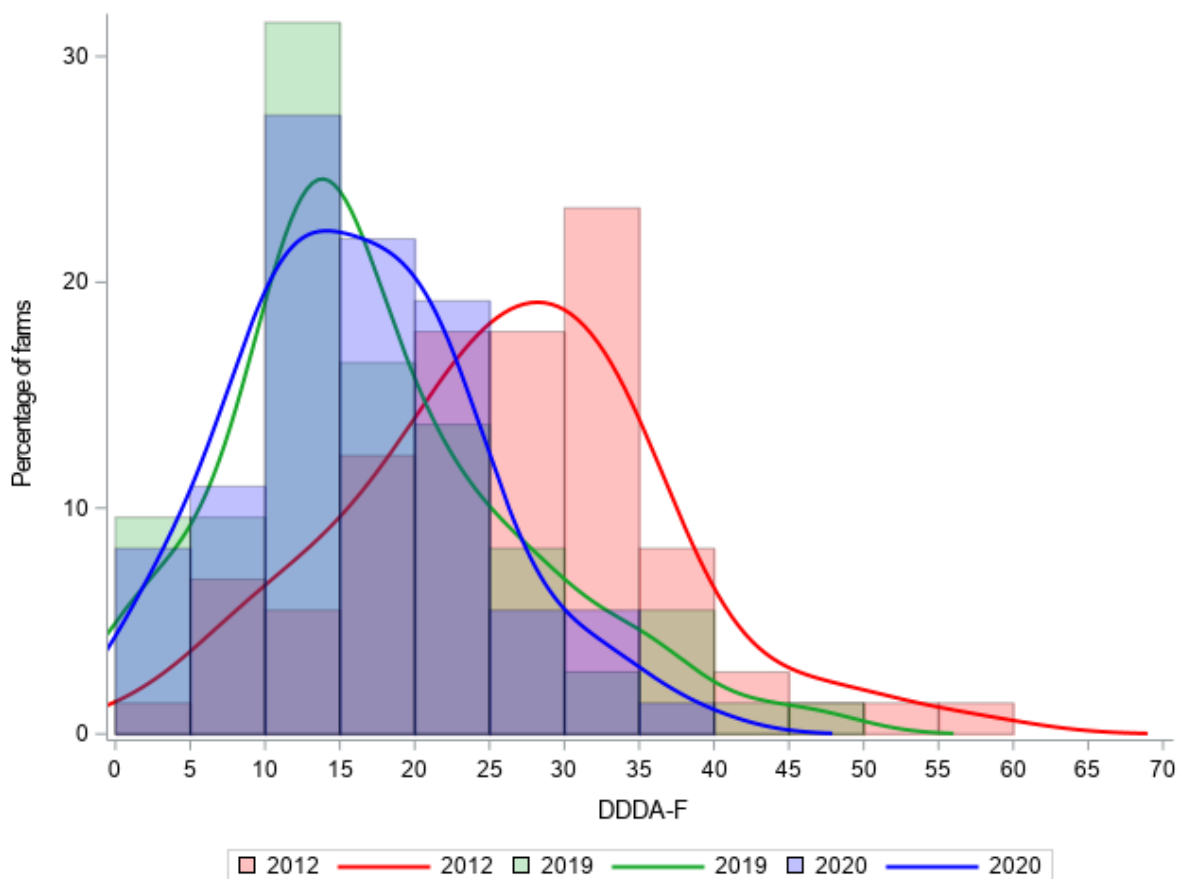


Figure B32. Scatter plot of 2019 and 2020 DDDA<sub>F</sub> values for rosé veal combination farms. The red solid lines represent the action thresholds defined by the SDa. The number of farms with persistently high usage levels (farms whose usage levels exceeded the action threshold in both years) is listed in the upper-right corner of the scatter plot

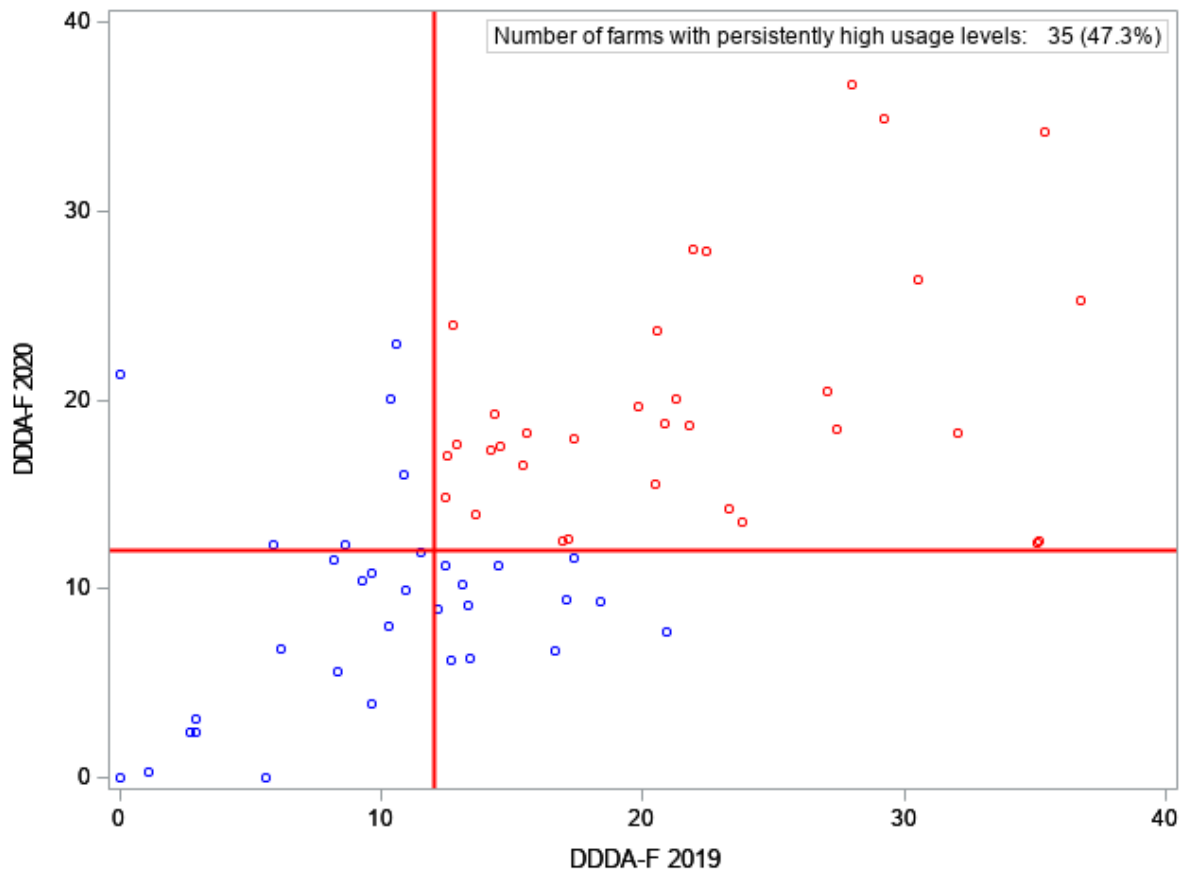


Table A44. Antibiotic use in DDDA<sub>F</sub> at rosé veal combination farms in 2020, by pharmacotherapeutic group and route of administration

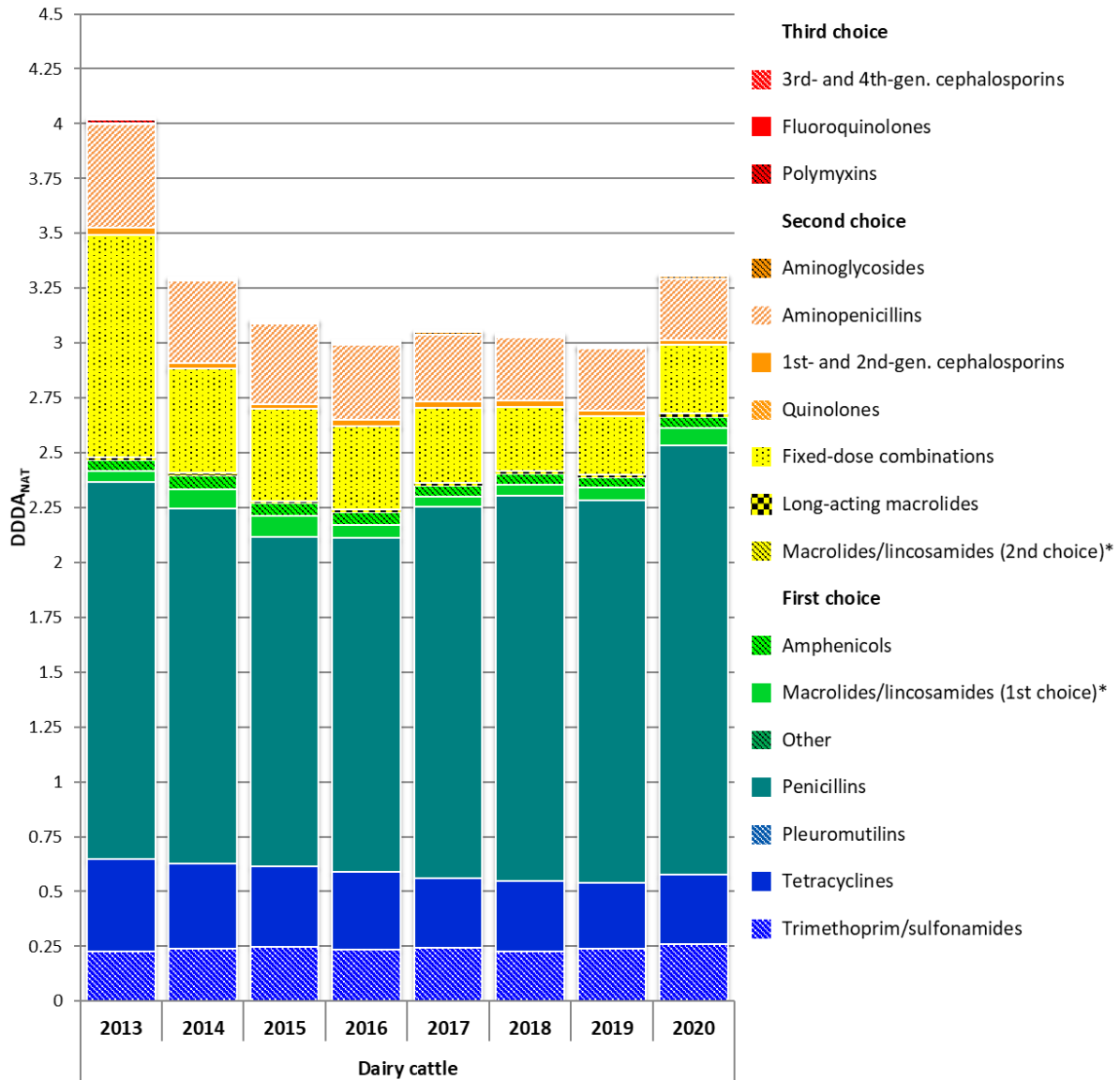
| Choice | Pharmacotherapeutic group | Route of administration | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |       |      |
|--------|---------------------------|-------------------------|--------------------------------------|-------------------|-------|------|
|        |                           |                         |                                      | Median            | P75   | Mean |
| 1      | Amphenicols               | Parenteral              | 1                                    | 1.25              | 1.84  | 1.41 |
| 1      | Macrolides/lincosamides   | Oral                    | 14                                   | 2.45              | 3.88  | 2.73 |
| 1      | Macrolides/lincosamides   | Parenteral              | 27                                   | 0.01              | 0.11  | 0.10 |
| 1      | Penicillins               | Parenteral              | 4                                    | 0.22              | 0.41  | 0.33 |
| 1      | Tetracyclines             | Oral                    | 5                                    | 8.36              | 11.13 | 8.64 |
| 1      | Tetracyclines             | Parenteral              | 54                                   | 0.00              | 0.01  | 0.01 |
| 1      | Trimethoprim/sulfonamides | Oral                    | 34                                   | 0.17              | 1.43  | 0.91 |
| 1      | Trimethoprim/sulfonamides | Parenteral              | 20                                   | 0.02              | 0.05  | 0.04 |
| 2      | Aminoglycosides           | Oral                    | 36                                   | 0.00              | 0.05  | 0.12 |
| 2      | Aminoglycosides           | Parenteral              | 45                                   | 0.00              | 0.04  | 0.09 |
| 2      | Aminopenicillins          | Oral                    | 34                                   | 0.13              | 1.53  | 0.86 |
| 2      | Aminopenicillins          | Parenteral              | 11                                   | 0.05              | 0.16  | 0.11 |
| 2      | Quinolones                | Oral                    | 57                                   | 0.00              | 0.00  | 0.35 |
| 2      | Fixed-dose combinations   | Parenteral              | 68                                   | 0.00              | 0.00  | 0.00 |
| 2      | Long-acting macrolides    | Parenteral              | 22                                   | 0.14              | 0.31  | 0.25 |
| 3      | Fluoroquinolones          | Parenteral              | 64                                   | 0.00              | 0.00  | 0.01 |
| 3      | Polymyxins                | Parenteral              | 72                                   | 0.00              | 0.00  | 0.00 |



## Dairy cattle farming sector

### 1. Antibiotic use in DDDA<sub>NAT</sub>

Figure B33. DDDA<sub>NAT</sub> trends in the dairy cattle farming sector over the 2013-2020 period, by pharmacotherapeutic group



\* In the poultry farming sector, all macrolides/lincosamides (with the exception of 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<sub>F</sub>

Number of farms: 15,522

Number of farms with DDDA<sub>F</sub>=0: 296 (1.9%)

Number of farms that used third- and fourth-generation cephalosporins: 34 (0.2%)

Number of farms that used fluoroquinolones: 945 (6.1%)

Number of farms that used polymyxins: 308 (2.0%)

Table A45. Antibiotic use at dairy cattle farms, presented as overall antibiotic use from 2012 to 2020 (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<sub>F</sub>\***

| 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 |

\* Only years for which similar DDDA<sub>F</sub> calculation methods were used have been included.

**B Use of dry cow (intramammary) antibiotics, in DDDA<sub>F</sub> (animals >2 years of age)**

| N      | Mean | Median | P75 | P90 |
|--------|------|--------|-----|-----|
| 15,522 | 1.2  | 1.1    | 1.8 | 2.5 |

**C Use of mastitis injectors, in DDDA<sub>F</sub> (animals >2 years of age)**

| N      | Mean | Median | P75 | P90 |
|--------|------|--------|-----|-----|
| 15,522 | 0.7  | 0.6    | 1.0 | 1.6 |

**D Use of oral antibiotics in calves, in DDDA<sub>F</sub> (animals <56 days of age)**

| N      | Mean | Median | P75 | P90 |
|--------|------|--------|-----|-----|
| 15,522 | 1.9  | 0.0    | 0.0 | 3.7 |

Figure B34. 2012, 2019 and 2020 DDDA<sub>F</sub> distributions for dairy cattle farms

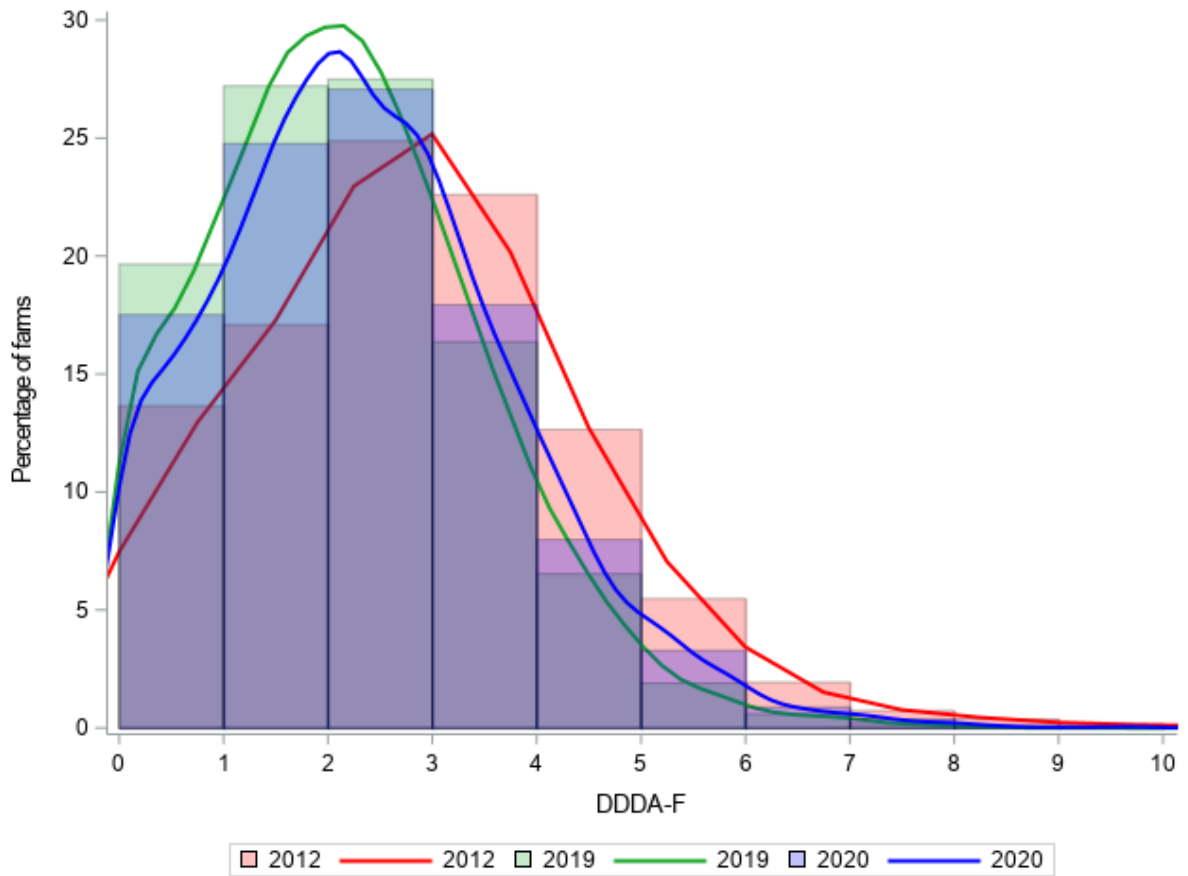


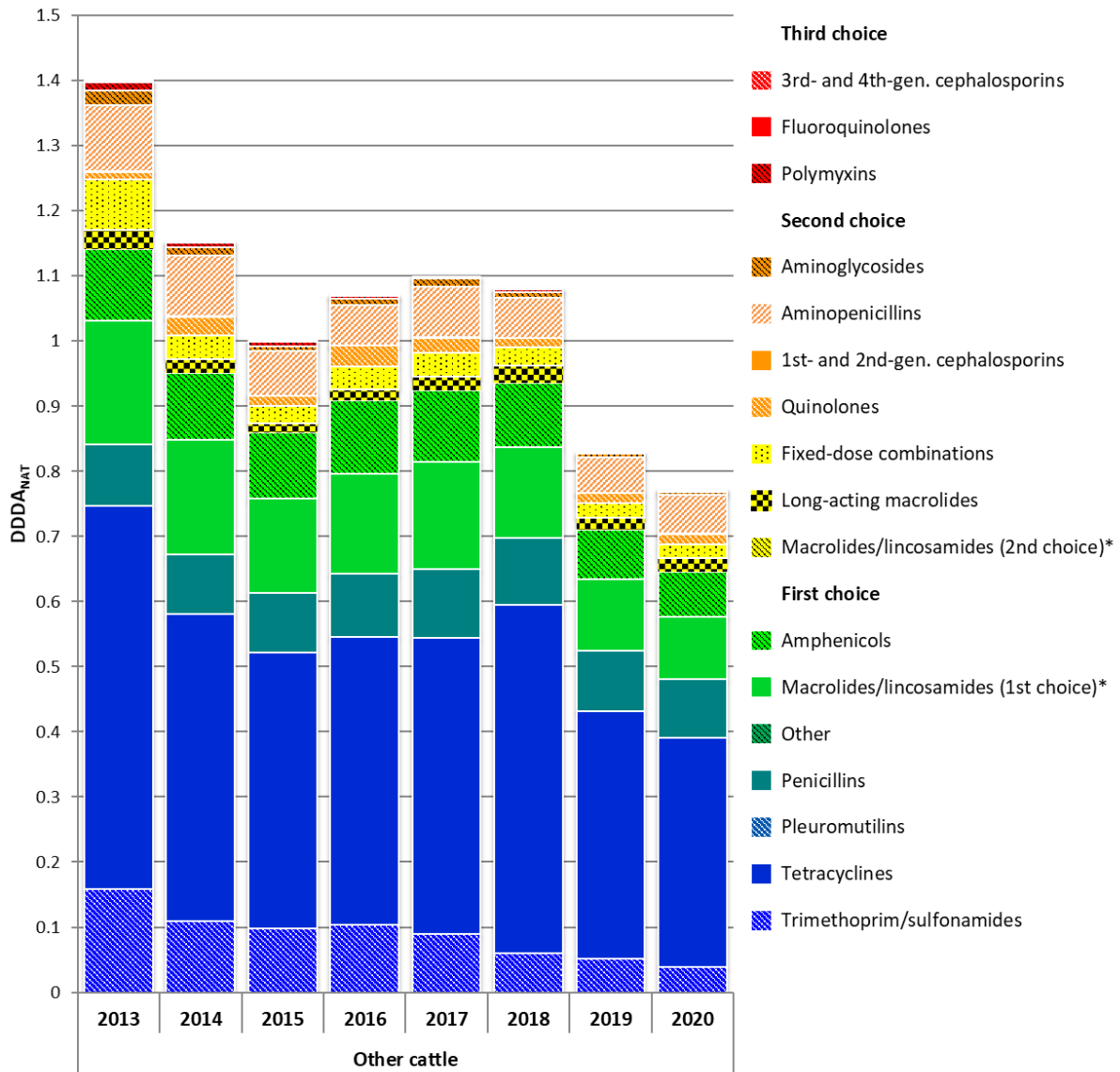
Table A46. Antibiotic use in DDDA<sub>F</sub> at dairy cattle farms in 2019, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group        | Route of administration          | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |      |      |
|--------|----------------------------------|----------------------------------|--------------------------------------|-------------------|------|------|
|        |                                  |                                  |                                      | Median            | P75  | Mean |
| 1      | Amphenicols                      | Parenteral                       | 8,607                                | 0.00              | 0.05 | 0.03 |
| 1      | Macrolides/lincosamides          | Intramammary                     | 15,517                               | 0.00              | 0.00 | 0.00 |
| 1      | Macrolides/lincosamides          | Oral                             | 15,513                               | 0.00              | 0.00 | 0.00 |
| 1      | Macrolides/lincosamides          | Parenteral                       | 10,551                               | 0.00              | 0.04 | 0.05 |
| 1      | Penicillins                      | Intramammary                     | 8,475                                | 0.00              | 0.35 | 0.26 |
| 1      | Penicillins                      | Intramammary for dry cow therapy | 3,071                                | 0.88              | 1.45 | 0.93 |
| 1      | Penicillins                      | Parenteral                       | 3,118                                | 0.13              | 0.32 | 0.24 |
| 1      | Tetracyclines                    | Oral                             | 15,232                               | 0.00              | 0.00 | 0.00 |
| 1      | Tetracyclines                    | Parenteral                       | 3,190                                | 0.10              | 0.23 | 0.16 |
| 1      | Tetracyclines                    | Intrauterine                     | 7,947                                | 0.00              | 0.08 | 0.05 |
| 1      | Trimethoprim/sulfonamides        | Oral                             | 14,762                               | 0.00              | 0.00 | 0.00 |
| 1      | Trimethoprim/sulfonamides        | Parenteral                       | 2,726                                | 0.12              | 0.25 | 0.19 |
| 2      | Aminoglycosides                  | Oral                             | 13,741                               | 0.00              | 0.00 | 0.01 |
| 2      | Aminoglycosides                  | Parenteral                       | 15,092                               | 0.00              | 0.00 | 0.00 |
| 2      | Aminopenicillins                 | Intramammary                     | 5,954                                | 0.07              | 0.23 | 0.16 |
| 2      | Aminopenicillins                 | Oral                             | 15,520                               | 0.00              | 0.00 | 0.00 |
| 2      | Aminopenicillins                 | Parenteral                       | 6,934                                | 0.02              | 0.08 | 0.06 |
| 2      | 1st- and 2nd-gen. cephalosporins | Intramammary                     | 14,842                               | 0.00              | 0.00 | 0.01 |
| 2      | 1st- and 2nd-gen. cephalosporins | Intrauterine                     | 11,883                               | 0.00              | 0.00 | 0.01 |
| 2      | Quinolones                       | Oral                             | 15,513                               | 0.00              | 0.00 | 0.00 |
| 2      | Fixed-dose combinations          | Intramammary                     | 7,226                                | 0.03              | 0.24 | 0.18 |
| 2      | Fixed-dose combinations          | Intramammary for dry cow therapy | 15,095                               | 0.00              | 0.00 | 0.01 |
| 2      | Fixed-dose combinations          | Parenteral                       | 11,699                               | 0.00              | 0.00 | 0.02 |
| 2      | Long-acting macrolides           | Parenteral                       | 13,490                               | 0.00              | 0.00 | 0.01 |
| 3      | 3rd- and 4th-gen. cephalosporins | Intramammary                     | 15,496                               | 0.00              | 0.00 | 0.00 |
| 3      | 3rd- and 4th-gen. cephalosporins | Parenteral                       | 15,505                               | 0.00              | 0.00 | 0.00 |
| 3      | Fluoroquinolones                 | Parenteral                       | 14,577                               | 0.00              | 0.00 | 0.00 |
| 3      | Polymyxins                       | Oral                             | 15,494                               | 0.00              | 0.00 | 0.00 |
| 3      | Polymyxins                       | Parenteral                       | 15,240                               | 0.00              | 0.00 | 0.00 |

## Non-dairy cattle farming sector

### 1. Antibiotic use in DDDA<sub>NAT</sub>

Figure B35. DDDA<sub>NAT</sub> trends in the non-dairy cattle farming sector over the 2013-2020 period, by pharmacotherapeutic group



\* In the poultry farming sector, all macrolides/lincosamides (with the exception of 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<sub>F</sub>

### 2.1 Suckler cow farms

Number of farms: 7,914

Number of farms with DDDA<sub>F</sub>=0: 3,996 (50.5%)

Number of farms that used third- and fourth-generation cephalosporins: 1 (0.0%)

Number of farms that used fluoroquinolones: 70 (0.9%)

Number of farms that used polymyxins: 44 (0.6%)

Table A47 Antibiotic use in DDDA<sub>F</sub> at suckler cow farms from 2012 to 2020\*

| 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 |

\* Only years for which similar DDDA<sub>F</sub> calculation methods were used have been included.

Figure B36. 2012, 2019 and 2020 DDDA<sub>F</sub> distributions for suckler cow farms (no probability density functions can be shown due to too little variation)

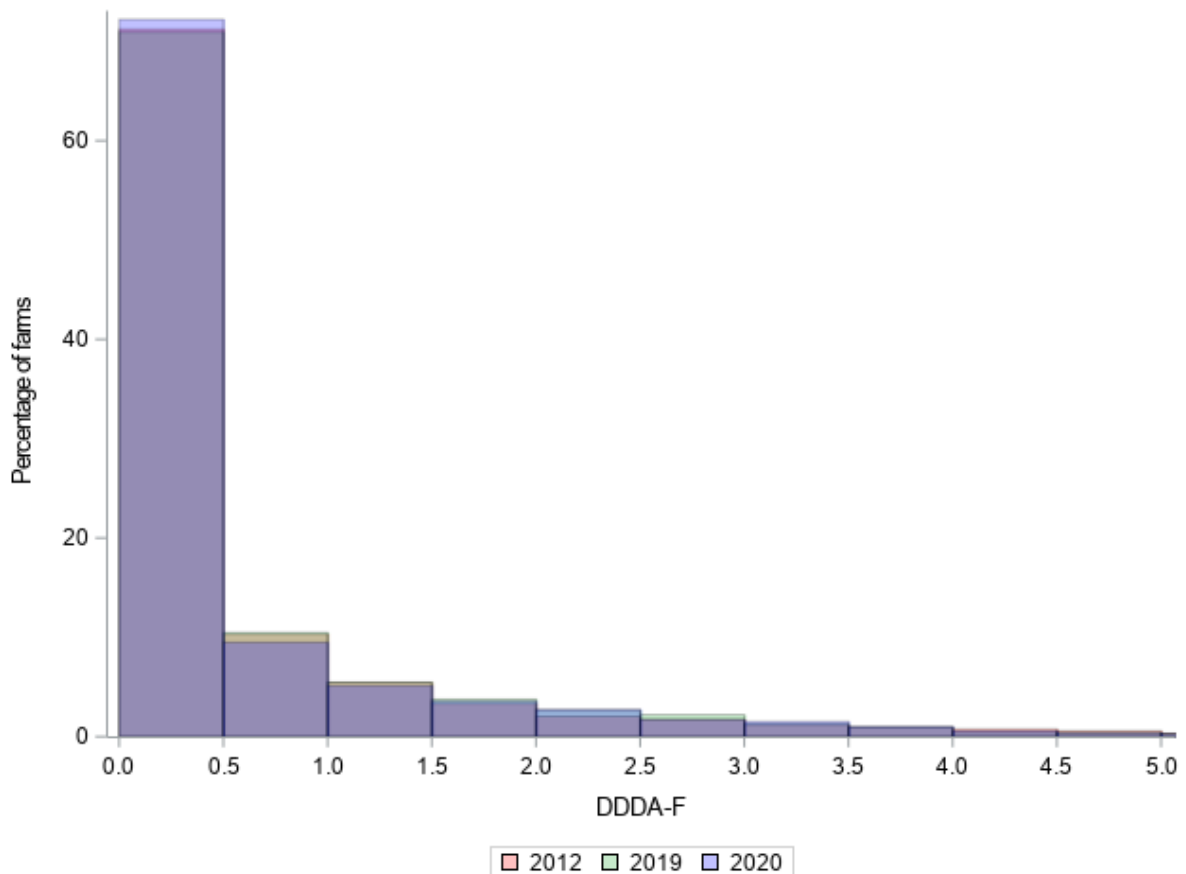


Table A48. Antibiotic use in DDDA<sub>F</sub> at suckler cow farms in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group        | Route of administration                     | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |      |      |
|--------|----------------------------------|---|--------------------------------------|-------------------|------|------|
|        |                                  |   |                                      | Median            | P75  | Mean |
| 1      | Amphenicols                      | Parenteral                                  | 6,685                                | 0.00              | 0.00 | 0.04 |
| 1      | Macrolides/lincosamides          | Oral  | 7,905                                | 0.00              | 0.00 | 0.00 |
| 1      | Macrolides/lincosamides          | Parenteral                                  | 7,610                                | 0.00              | 0.00 | 0.01 |
| 1      | Penicillins                      | Intramammary<br>Intramammary<br>for dry cow | 7,835                                | 0.00              | 0.00 | 0.01 |
| 1      | Penicillins                      | therapy                                     | 7,692                                | 0.00              | 0.00 | 0.04 |
| 1      | Penicillins                      | Parenteral                                  | 5,820                                | 0.00              | 0.05 | 0.21 |
| 1      | Tetracyclines                    | Oral  | 7,854                                | 0.00              | 0.00 | 0.02 |
| 1      | Tetracyclines                    | Parenteral                                  | 6,592                                | 0.00              | 0.00 | 0.06 |
| 1      | Tetracyclines                    | Intrauterine                                | 6,899                                | 0.00              | 0.00 | 0.03 |
| 1      | Trimethoprim/sulfonamides        | Oral  | 7,838                                | 0.00              | 0.00 | 0.00 |
| 1      | Trimethoprim/sulfonamides        | Parenteral                                  | 7,029                                | 0.00              | 0.00 | 0.03 |
| 2      | Aminoglycosides                  | Oral  | 7,833                                | 0.00              | 0.00 | 0.00 |
| 2      | Aminoglycosides                  | Parenteral                                  | 7,840                                | 0.00              | 0.00 | 0.00 |
| 2      | Aminopenicillins                 | Intramammary                                | 7,700                                | 0.00              | 0.00 | 0.01 |
| 2      | Aminopenicillins                 | Oral  | 7,911                                | 0.00              | 0.00 | 0.00 |
| 2      | Aminopenicillins                 | Parenteral                                  | 6,718                                | 0.00              | 0.00 | 0.06 |
| 2      | 1st- and 2nd-gen. cephalosporins | Intramammary                                | 7,902                                | 0.00              | 0.00 | 0.00 |
| 2      | 1st- and 2nd-gen. cephalosporins | Intrauterine                                | 7,837                                | 0.00              | 0.00 | 0.00 |
| 2      | Fixed-dose combinations          | Intramammary<br>Intramammary<br>for dry cow | 7,732                                | 0.00              | 0.00 | 0.01 |
| 2      | Fixed-dose combinations          | therapy                                     | 7,901                                | 0.00              | 0.00 | 0.00 |
| 2      | Fixed-dose combinations          | Parenteral                                  | 7,159                                | 0.00              | 0.00 | 0.06 |
| 2      | Long-acting macrolides           | Parenteral                                  | 7,414                                | 0.00              | 0.00 | 0.02 |
| 3      | 3rd- and 4th-gen. cephalosporins | Intramammary                                | 7,913                                | 0.00              | 0.00 | 0.00 |
| 3      | Fluoroquinolones                 | Parenteral                                  | 7,844                                | 0.00              | 0.00 | 0.00 |
| 3      | Polymyxins                       | Oral  | 7,908                                | 0.00              | 0.00 | 0.00 |
| 3      | Polymyxins                       | Parenteral                                  | 7,876                                | 0.00              | 0.00 | 0.00 |

## 2.2 Rearing farms

Number of farms: 634

Number of farms with  $DDDA_F=0$ : 463 (73,0%)

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 A49. Antibiotic use in  $DDDA_F$  at rearing farms from 2012 to 2020\*

| 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 |

\* 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 B37. 2013, 2019 and 2020  $DDDA_F$  distributions for rearing farms (no probability density functions can be shown due to too little variation)

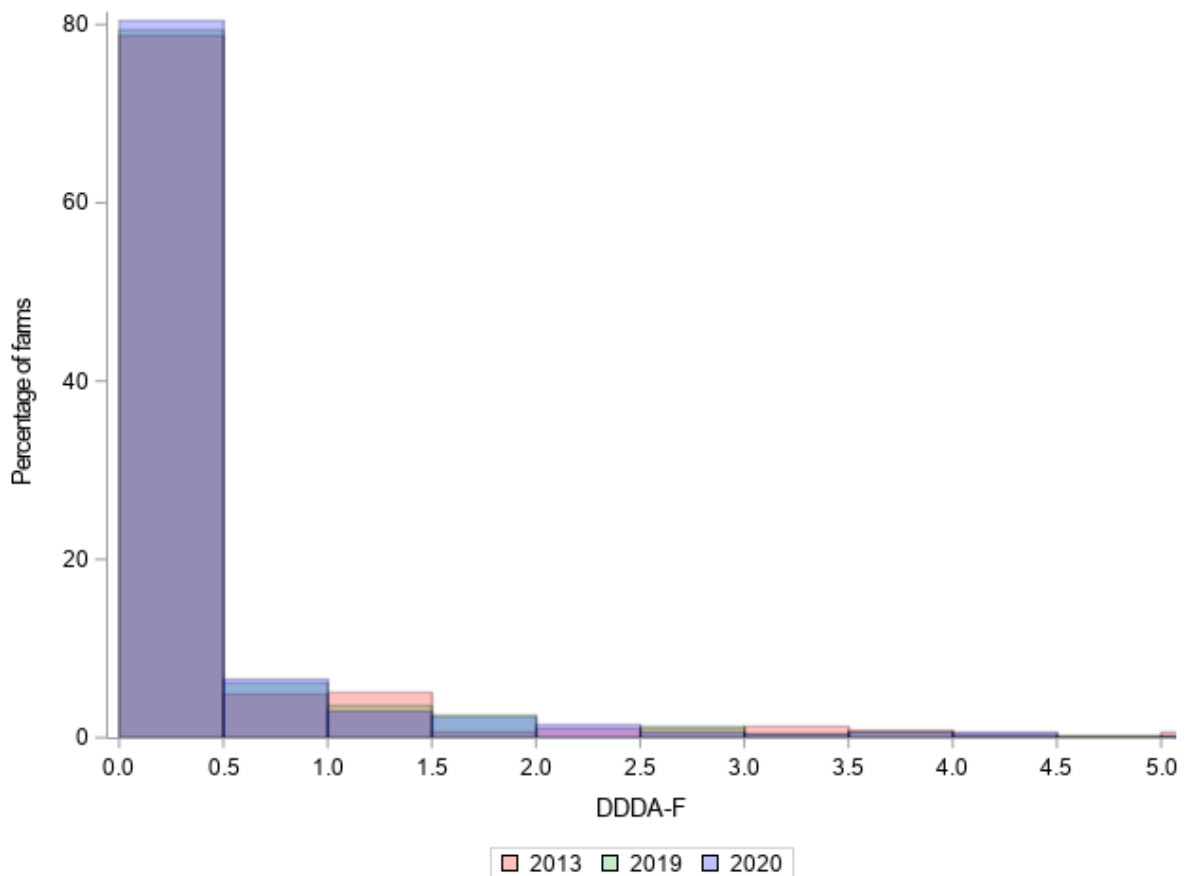




Table A50. Antibiotic use in DDDA<sub>F</sub> at rearing farms in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group        | Route of administration | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |      |      |
|--------|----------------------------------|-------------------------|--------------------------------------|-------------------|------|------|
|        |                                  |                         |                                      | Median            | P75  | Mean |
| 1      | Amphenicols                      | Parenteral              | 519                                  | 0.00              | 0.00 | 0.19 |
| 1      | Macrolides/lincosamides          | Oral                    | 620                                  | 0.00              | 0.00 | 0.09 |
| 1      | Macrolides/lincosamides          | Parenteral              | 610                                  | 0.00              | 0.00 | 0.01 |
| 1      | Penicillins                      | Parenteral              | 553                                  | 0.00              | 0.00 | 0.08 |
| 1      | Tetracyclines                    | Oral                    | 603                                  | 0.00              | 0.00 | 0.33 |
| 1      | Tetracyclines                    | Parenteral              | 588                                  | 0.00              | 0.00 | 0.04 |
| 1      | Tetracyclines                    | Intrauterine            | 633                                  | 0.00              | 0.00 | 0.00 |
| 1      | Trimethoprim/sulfonamides        | Oral                    | 627                                  | 0.00              | 0.00 | 0.03 |
| 1      | Trimethoprim/sulfonamides        | Parenteral              | 599                                  | 0.00              | 0.00 | 0.03 |
| 2      | Aminoglycosides                  | Oral                    | 626                                  | 0.00              | 0.00 | 0.00 |
| 2      | Aminoglycosides                  | Parenteral              | 630                                  | 0.00              | 0.00 | 0.00 |
| 2      | Aminopenicillins                 | Oral                    | 628                                  | 0.00              | 0.00 | 0.02 |
| 2      | Aminopenicillins                 | Parenteral              | 604                                  | 0.00              | 0.00 | 0.01 |
| 2      | 1st- and 2nd-gen. cephalosporins | Intrauterine            | 633                                  | 0.00              | 0.00 | 0.00 |
| 2      | Quinolones                       | Oral                    | 633                                  | 0.00              | 0.00 | 0.01 |
| 2      | Fixed-dose combinations          | Parenteral              | 628                                  | 0.00              | 0.00 | 0.01 |
| 2      | Long-acting macrolides           | Parenteral              | 596                                  | 0.00              | 0.00 | 0.03 |
| 3      | Fluoroquinolones                 | Parenteral              | 633                                  | 0.00              | 0.00 | 0.00 |

### 2.3 Beef farms

Number of farms: 2,728

Number of farms with DDDA<sub>F</sub>=0: 1,903 (69.8%)

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

Number of farms that used fluoroquinolones: 13 (0.5%)

Number of farms that used polymyxins: 14 (0.5%)

Table A51. Antibiotic use in DDDA<sub>F</sub> at beef farms from 2012 to 2020\*

| 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 |

\* Only years for which similar DDDA<sub>F</sub> 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 B38. 2013, 2019 and 2020 DDDA<sub>F</sub> distributions for beef farms (no probability density functions can be shown due to too little variation)

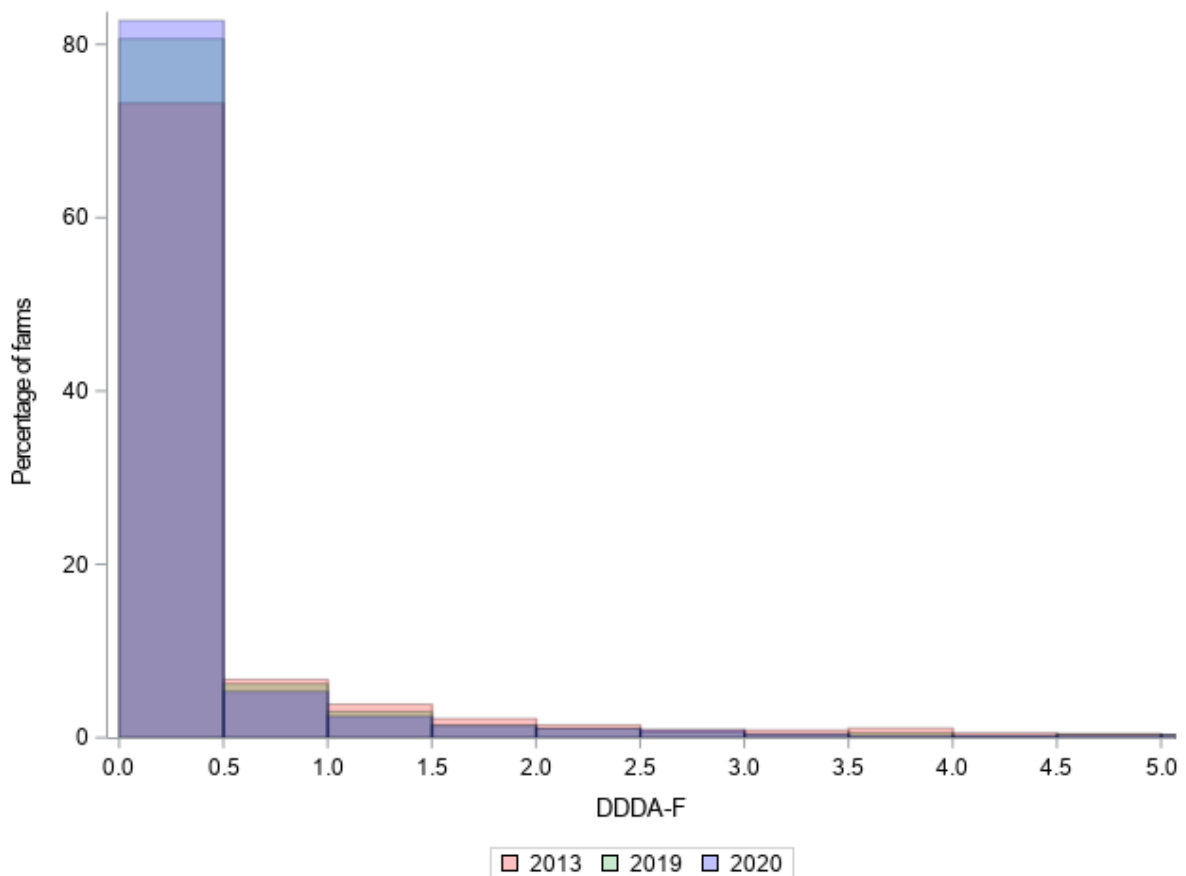


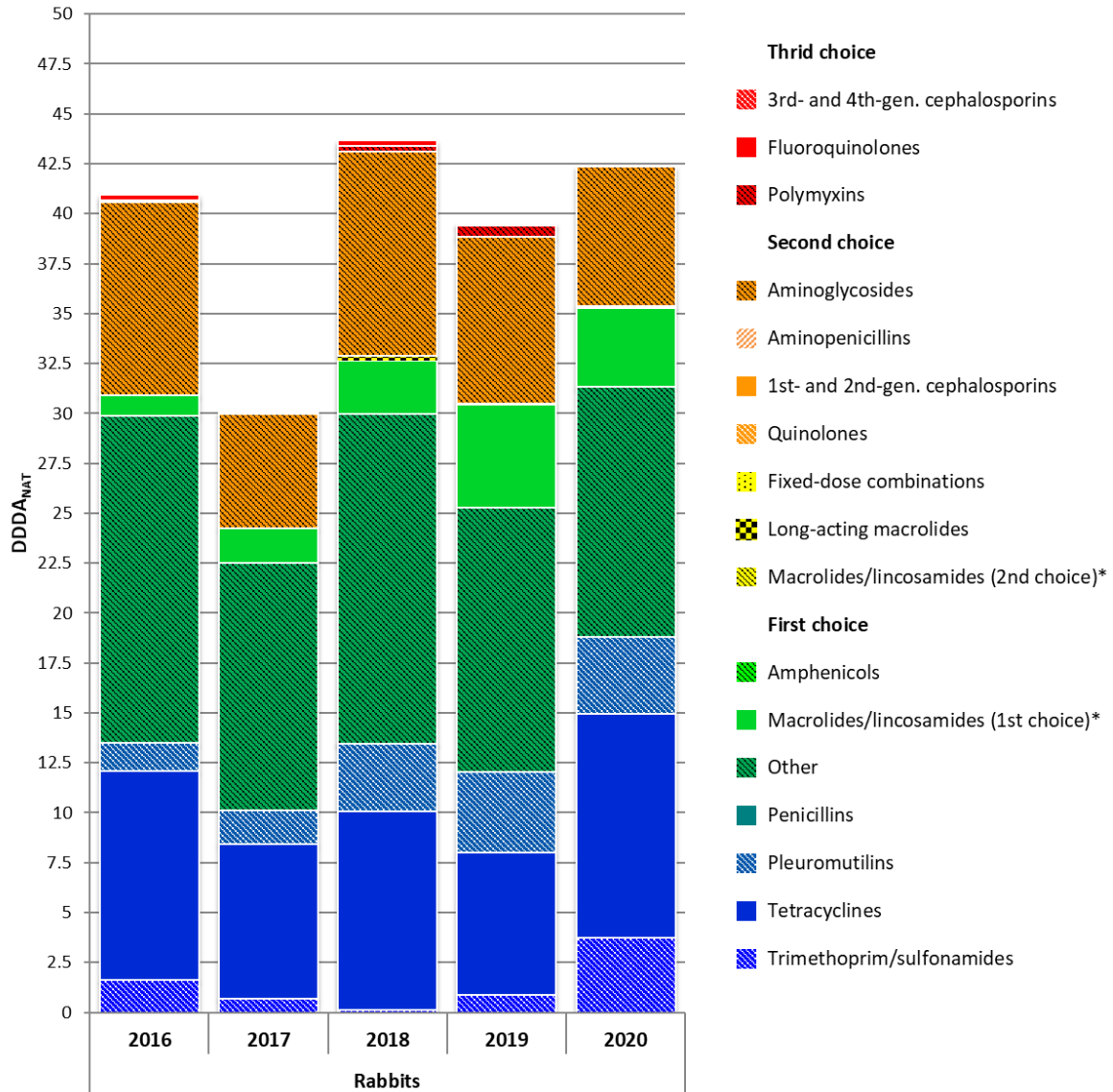
Table A52. Antibiotic use in DDDA<sub>F</sub> at beef farms in 2020, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group        | Route of administration                                | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |      |      |
|--------|----------------------------------|--|--------------------------------------|-------------------|------|------|
|        |                                  |  |                                      | Median            | P75  | Mean |
| 1      | Amphenicols                      | Parenteral   | 2,229                                | 0.00              | 0.00 | 0.10 |
| 1      | Macrolides/lincosamides          | Oral   | 2,608                                | 0.00              | 0.00 | 0.11 |
| 1      | Macrolides/lincosamides          | Parenteral   | 2,572                                | 0.00              | 0.00 | 0.01 |
| 1      | Penicillins                      | Intramammary<br>Intramammary<br>for dry cow<br>therapy | 2,718                                | 0.00              | 0.00 | 0.00 |
| 1      | Penicillins                      | Parenteral   | 2,701                                | 0.00              | 0.00 | 0.01 |
| 1      | Penicillins                      | Parenteral   | 2,247                                | 0.00              | 0.00 | 0.07 |
| 1      | Tetracyclines                    | Oral   | 2,545                                | 0.00              | 0.00 | 0.37 |
| 1      | Tetracyclines                    | Parenteral   | 2,463                                | 0.00              | 0.00 | 0.03 |
| 1      | Tetracyclines                    | Intrauterine   | 2,654                                | 0.00              | 0.00 | 0.00 |
| 1      | Trimethoprim/sulfonamides        | Oral   | 2,666                                | 0.00              | 0.00 | 0.05 |
| 1      | Trimethoprim/sulfonamides        | Parenteral   | 2,507                                | 0.00              | 0.00 | 0.01 |
| 2      | Aminoglycosides                  | Oral   | 2,676                                | 0.00              | 0.00 | 0.00 |
| 2      | Aminoglycosides                  | Parenteral   | 2,702                                | 0.00              | 0.00 | 0.00 |
| 2      | Aminopenicillins                 | Intramammary   | 2,714                                | 0.00              | 0.00 | 0.00 |
| 2      | Aminopenicillins                 | Oral   | 2,687                                | 0.00              | 0.00 | 0.03 |
| 2      | Aminopenicillins                 | Parenteral   | 2,440                                | 0.00              | 0.00 | 0.02 |
| 2      | 1st- and 2nd-gen. cephalosporins | Intramammary   | 2,727                                | 0.00              | 0.00 | 0.00 |
| 2      | 1st- and 2nd-gen. cephalosporins | Intrauterine   | 2,725                                | 0.00              | 0.00 | 0.00 |
| 2      | Quinolones                       | Oral   | 2,716                                | 0.00              | 0.00 | 0.01 |
| 2      | Fixed-dose combinations          | Intramammary<br>Intramammary<br>for dry cow<br>therapy | 2,714                                | 0.00              | 0.00 | 0.00 |
| 2      | Fixed-dose combinations          | Parenteral   | 2,727                                | 0.00              | 0.00 | 0.00 |
| 2      | Fixed-dose combinations          | Parenteral   | 2,613                                | 0.00              | 0.00 | 0.01 |
| 2      | Long-acting macrolides           | Parenteral   | 2,507                                | 0.00              | 0.00 | 0.03 |
| 3      | Fluoroquinolones                 | Parenteral   | 2,715                                | 0.00              | 0.00 | 0.00 |
| 3      | Polymyxins                       | Oral   | 2,727                                | 0.00              | 0.00 | 0.00 |
| 3      | Polymyxins                       | Parenteral   | 2,715                                | 0.00              | 0.00 | 0.00 |

## Rabbit farming sector

### 1. Antibiotic use in DDDA<sub>NAT</sub>

Figure B39. DDDA<sub>NAT</sub> trends in the rabbit farming sector over the 2016-2020 period, by pharmacotherapeutic group



\* In the poultry farming sector, all macrolides/lincosamides (with the exception of 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<sub>F</sub>

Number of farms: 35

Number of farms with DDDA<sub>F</sub>=0: 1 (2.9%)

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 A53. Antibiotic use in DDDA<sub>F</sub> at rabbit farms from 2016 to 2020\*

| 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 |

\* Only years for which similar DDDA<sub>F</sub> calculation methods were used have been included.

Figure B40. 2016, 2019 and 2020 DDDA<sub>F</sub> distributions for rabbit farms

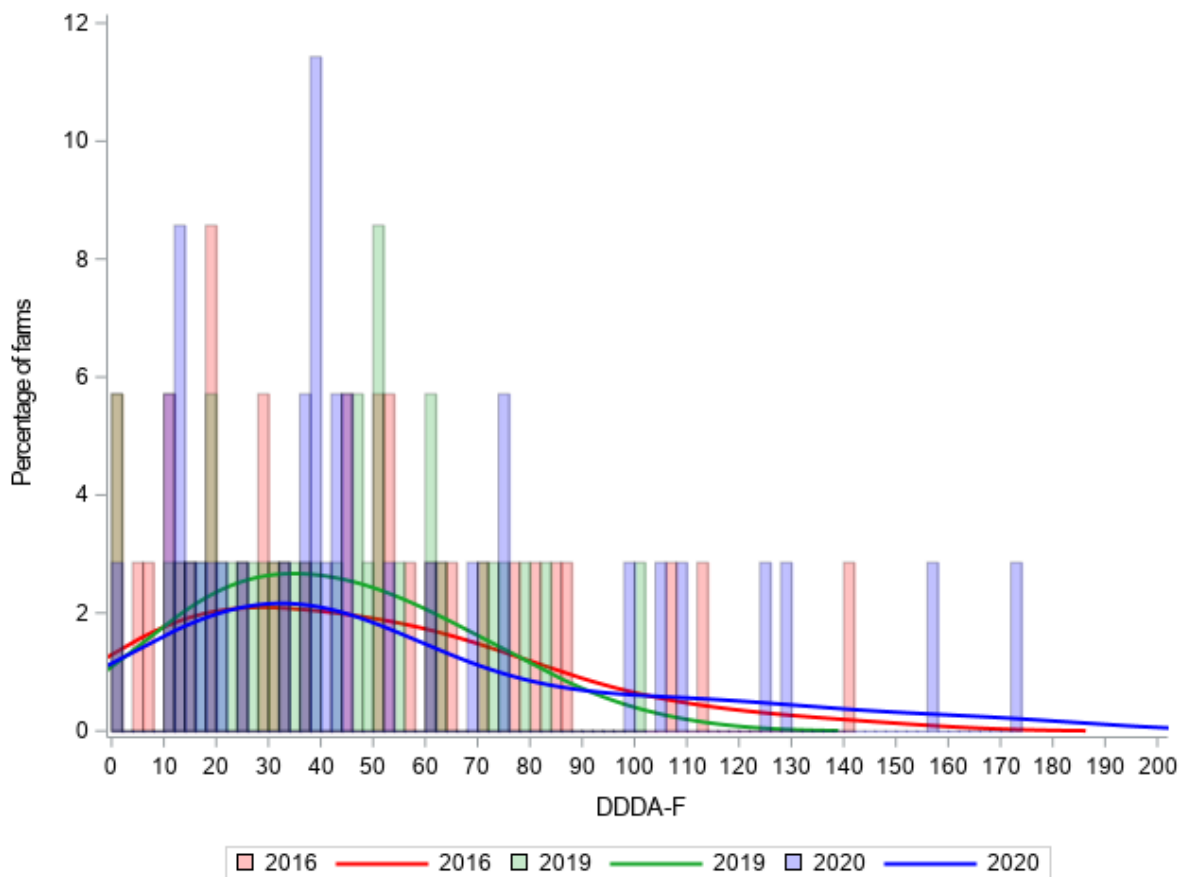


Table A54. Antibiotic use in DDDA<sub>F</sub> at rabbit farms in 2019, by pharmacotherapeutic group and route of administration

| Choice | Pharmacotherapeutic group | Route of administration | # of farms with DDDA <sub>F</sub> =0 | DDDA <sub>F</sub> |       |       |
|--------|---------------------------|-------------------------|--------------------------------------|-------------------|-------|-------|
|        |                           |                         |                                      | Median            | P75   | Mean  |
| 1      | Macrolides/lincosamides   | Oral                    | 25                                   | 0.00              | 2.77  | 3.93  |
| 1      | Other                     | Oral                    | 8                                    | 7.43              | 25.98 | 15.53 |
| 1      | Pleuromutilins            | Oral                    | 18                                   | 0.00              | 8.98  | 4.21  |
| 1      | Tetracyclines             | Oral                    | 18                                   | 0.00              | 16.53 | 12.93 |
| 1      | Tetracyclines             | Parenteral              | 16                                   | 0.35              | 2.17  | 1.23  |
| 1      | Trimethoprim/sulfonamides | Oral                    | 27                                   | 0.00              | 0.00  | 5.33  |
| 2      | Aminoglycosides           | Oral                    | 13                                   | 3.34              | 19.25 | 10.17 |
| 2      | Quinolones                | Oral                    | 34                                   | 0.00              | 0.00  | 0.13  |

## Colistin use in DDDA<sub>F</sub>

Table A55. Descriptive statistics of farms that used colistin in 2020, Med.=Median.

| Livestock sector              | Type of farm/<br>production category | % of total<br>number of<br>farms | N   | Colistin use in DDDA <sub>F</sub> |      |     |      |
|-------------------------------|--------------------------------------|----------------------------------|-----|-----------------------------------|------|-----|------|
|                               |                                      |                                  |     | Mean                              | Med. | P75 | P95  |
| <b>Broiler farming sector</b> | All broiler farms                    | 1.0%                             | 8   | 2.5                               | 1.0  | 3.3 | 9.6  |
|                               | - Farms with conventional breeds     | 1.8%                             | 7   | 2.8                               | 1.3  | 4.1 | 9.6  |
|                               | - Farms with alternative breeds      | 0.2%                             | 1   | 0.4                               | 0.4  | 0.4 | 0.4  |
|                               | Parent stock rearing farms           | 0.0%                             | 0   | 0.0                               | 0.0  | 0.0 | 0.0  |
|                               | Parent stock production farms        | 1.0%                             | 2   | 4.1                               | 4.1  | 4.3 | 4.3  |
|                               | Grandparent stock rearing farms      | 0.0%                             | 0   | 0.0                               | 0.0  | 0.0 | 0.0  |
|                               | Grandparent stock production farms   | 0.0%                             | 0   | 0.0                               | 0.0  | 0.0 | 0.0  |
| <b>Layer farming sector</b>   | Layer farms                          | 15.6%                            | 128 | 6.8                               | 5.3  | 8.8 | 17.0 |
|                               | Layer rearing farms                  | 0.0%                             | 0   | 0.0                               | 0.0  | 0.0 | 0.0  |
|                               | Parent stock rearing farms           | 0.0%                             | 0   | 0.0                               | 0.0  | 0.0 | 0.0  |
|                               | Parent stock production farms        | 4.9%                             | 2   | 4.9                               | 4.9  | 7.3 | 7.3  |
|                               | Grandparent stock rearing farms      | 0.0%                             | 0   | 0.0                               | 0.0  | 0.0 | 0.0  |
|                               | Grandparent stock production farms   | 0.0%                             | 0   | 0.0                               | 0.0  | 0.0 | 0.0  |
| <b>Turkey farming sector</b>  |                                      | 0.0%                             | 0   | 0.0                               | 0.0  | 0.0 | 0.0  |
| <b>Pig farming sector</b>     | Sows/suckling piglets                | 30.7%                            | 483 | 0.3                               | 0.1  | 0.3 | 0.9  |
|                               | Weaner pigs                          | 28.7%                            | 504 | 6.7                               | 2.1  | 5.8 | 23.0 |
|                               | Fattening pigs                       | 2.7%                             | 98  | 0.4                               | 0.1  | 0.3 | 1.4  |
| <b>Veal farming sector</b>    | White veal farms                     | 6.8%                             | 55  | 0.4                               | 0.0  | 0.1 | 2.7  |
|                               | Rosé veal starter farms              | 2.5%                             | 5   | 4.8                               | 0.0  | 0.1 | 23.8 |
|                               | Rosé veal fattening farms            | 1.0%                             | 7   | 0.0                               | 0.0  | 0.1 | 0.1  |
|                               | Rosé veal combination farms          | 2.7%                             | 2   | 0.0                               | 0.0  | 0.0 | 0.0  |
| <b>Cattle farming sector</b>  | Dairy cattle farms                   | 2.0%                             | 308 | 0.1                               | 0.0  | 0.1 | 0.2  |
|                               | Rearing farms                        | 0.0%                             | 0   | 0.0                               | 0.0  | 0.0 | 0.0  |
|                               | Suckler cow farms                    | 0.6%                             | 44  | 0.3                               | 0.1  | 0.4 | 1.2  |
|                               | Beef farms                           | 0.5%                             | 14  | 0.2                               | 0.0  | 0.1 | 1.1  |
| <b>Rabbit farming sector</b>  |                                      | 0.0%                             | 0   | 0.0                               | 0.0  | 0.0 | 0.0  |

## Distributions new VBI veterinarians

Table A56. 2020 new VBI distributions for veterinarians by livestock sector and type of farm/production category. Farms with persistent high usage levels (a usage level exceeding the action threshold for two years in a row) are excluded.

| Livestock sector       | Type of farm/production category | SDa benchmark threshold | N   | Mean | Median | P75  | P90  |
|------------------------|----------------------------------|-------------------------|-----|------|--------|------|------|
| Broiler farming sector | Farms with conventional breeds   | 8                       | 63  | 7.9  | 5.9    | 9.5  | 15.3 |
|                        | Farms with alternative breeds    | 8                       | 74  | 1.5  | 1.1    | 2.6  | 3.8  |
| Turkey farming sector  | Turkey farms                     | 10                      | 12  | 5.1  | 3.4    | 5.5  | 7.2  |
| Pig farming sector     | Sows/suckling piglets            | 5                       | 192 | 3.9  | 2.4    | 3.7  | 4.8  |
|                        | Weaner pigs                      | 20                      | 193 | 11.0 | 9.1    | 14.5 | 20.2 |
|                        | Fattening pigs                   | 5                       | 228 | 2.8  | 2.6    | 3.4  | 4.8  |
| Veal farming sector    | White veal farms                 | 23                      | 55  | 15.8 | 16.4   | 18.0 | 20.7 |
|                        | Rosé veal starter farms          | 67                      | 45  | 48.3 | 50.2   | 59.4 | 67.7 |
|                        | Rosé veal fattening farms        | 4                       | 104 | 1.9  | 0.9    | 2.1  | 3.7  |
|                        | Rosé veal combination farms      | 12                      | 24  | 9.8  | 9.6    | 14.3 | 18.3 |
| Cattle farming sector  | Dairy cattle farms               | 5                       | 693 | 2.5  | 2.4    | 2.8  | 3.1  |
|                        | Rearing farms                    | 2                       | 205 | 0.6  | 0.0    | 0.4  | 1.3  |
|                        | Suckler cow farms                | 2                       | 678 | 0.5  | 0.4    | 0.7  | 1.1  |
|                        | Beef farms                       | 2                       | 358 | 0.5  | 0.2    | 0.7  | 1.2  |

Table A57. 2020 DDDA<sub>VET</sub> distributions for veterinarians by livestock sector and type of farm/production category. This is the same calculation as in Table A56, but without excluding persistent farms with persistent high usage levels.

| Livestock sector       | Type of farm/production category | SDa benchmark threshold | N   | Mean | Median | P75  | P90  |
|------------------------|----------------------------------|-------------------------|-----|------|--------|------|------|
| Broiler farming sector | Farms with conventional breeds   | 8                       | 69  | 11.7 | 11.7   | 15.5 | 21.4 |
|                        | Farms with alternative breeds    | 8                       | 75  | 1.6  | 1.1    | 2.9  | 4.2  |
| Turkey farming sector  | Turkey farms                     | 10                      | 12  | 5.4  | 5.9    | 7.2  | 10.5 |
| Pig farming sector     | Sows/suckling piglets            | 5                       | 195 | 4.3  | 3.0    | 4.8  | 6.1  |
|                        | Weaner pigs                      | 20                      | 193 | 20.5 | 12.1   | 22.7 | 43.7 |
|                        | Fattening pigs                   | 5                       | 230 | 4.0  | 3.5    | 5.3  | 7.3  |
| Veal farming sector    | White veal farms                 | 23                      | 56  | 16.4 | 17.0   | 19.1 | 22.0 |
|                        | Rosé veal starter farms          | 67                      | 54  | 62.5 | 61.1   | 74.0 | 83.0 |
|                        | Rosé veal fattening farms        | 4                       | 113 | 4.8  | 3.4    | 7.5  | 10.9 |
|                        | Rosé veal combination farms      | 12                      | 42  | 14.8 | 15.2   | 18.6 | 25.2 |
| Cattle farming sector  | Dairy cattle farms               | 5                       | 694 | 2.6  | 2.5    | 2.9  | 3.3  |
|                        | Rearing farms                    | 2                       | 207 | 0.8  | 0.0    | 0.5  | 1.6  |
|                        | Suckler cow farms                | 2                       | 682 | 0.7  | 0.5    | 0.9  | 1.6  |
|                        | Beef farms                       | 2                       | 366 | 0.6  | 0.3    | 0.8  | 1.7  |



Table A58. 2020 new VBI distributions for veterinarians by livestock sector and type of farm/production category, for sector that have negotiated intermediate benchmark thresholds. Farms with persistent high usage levels (a usage level exceeding the intermediate action threshold for two years in a row) are excluded.

These intermediate action thresholds are set higher than the SDA's action thresholds, resulting in less farms being excluded from the calculations.

| <b>Livestock sector</b> | <b>Type of farm/production category</b> | <b>Sector-negotiated threshold</b> | <b>N</b> | <b>Mean</b> | <b>Median</b> | <b>P75</b> | <b>P90</b> |
|-------------------------|---|------------------------------------|----------|-------------|---------------|------------|------------|
| Broiler farming sector  | Farms with conventional breeds          | 26                                 | 68       | 11.3        | 11.1          | 14.9       | 20.6       |
|                         | Farms with alternative breeds           | 15                                 | 74       | 1.5         | 1.1           | 2.8        | 3.9        |
| Pig farming sector      | Sows/suckling piglets                   | 10                                 | 195      | 4.0         | 2.9           | 4.4        | 5.7        |
|                         | Weaner pigs                             | 40                                 | 193      | 14.1        | 11.1          | 19.3       | 29.1       |
|                         | Fattening pigs                          | 10                                 | 229      | 3.6         | 3.2           | 4.8        | 6.1        |

## Numbers of animals in the Dutch livestock sector

Table A59. Numbers of agricultural livestock (x1,000) in the Netherlands from 2009 to 2020, 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    |
|------------------------------|--------|---------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|
| <b>Piglets (&lt;20 kg)</b>   | 4,809  | 4,649   | 4,797  | 4,993  | 4,920  | 5,116   | 5,408   | 4,986   | 5,522   | 5,287   | 5,002   | 4,883   |
| <b>Sows</b>                  | 1,100  | 1,098   | 1,106  | 1,081  | 1,095  | 1,106   | 1,053   | 1,022   | 1,066   | 967     | 1,047   | 926     |
| <b>Fattening pigs</b>        | 4,099  | 4,419   | 4,179  | 4,189  | 4,209  | 4,087   | 4,223   | 4,140   | 3,967   | 4,032   | 4,163   | 4,032   |
| <b>Other pigs</b>            | 2,100  | 2,040   | 2,021  | 1,841  | 1,789  | 1,765   | 1,769   | 1,733   | 1,741   | 1,623   | 1,709   | 1,697   |
| <b>Turkeys</b>               | 1,060  | 1,036   | 990    | 827    | 841    | 794     | 863     | 762     | 671     | 556     | 532     | 585     |
| <b>All chickens</b>          | 98,706 | 102,585 | 98,253 | 96,268 | 98,587 | 103,944 | 107,743 | 105,550 | 105,184 | 105,104 | 101,741 | 101,184 |
| <b>Of which broilers</b>     | 41,914 | 43,352  | 44,358 | 43,285 | 44,748 | 47,020  | 49,107  | 48,378  | 48,237  | 48,971  | 48,684  | 49,229  |
| <b>Veal calves</b>           | 894    | 928     | 906    | 908    | 925    | 921     | 909     | 956     | 953     | 1,017   | 1,066   | 1,071   |
| <b>All cattle combined</b>   | 3,112  | 3,039   | 2,993  | 3,045  | 3,064  | 3,230   | 3,360   | 3,353   | 3,082   | 2,634   | 2,679   | 2,689   |
| <b>Of which dairy cattle</b> | 1,562  | 1,518   | 1,504  | 1,541  | 1,597  | 1,610   | 1,717   | 1,794   | 1,665   | 1,552   | 1,590   | 1,569   |
| <b>Goats</b>                 | 374    | 353     | 380    | 397    | 413    | 431     | 470     | 500     | 533     | 588     | 615     | 633     |
| <b>Sheep</b>                 | 1,091  | 1,211   | 1,113  | 1,093  | 1,074  | 1,070   | 1,032   | 1,040   | 1,015   | 743     | 758     | 708     |
| <b>Weaned meat rabbits</b>   | 271    | 260     | 262    | 284    | 270    | 278     | 333     | 318     | 300     | 291     | 289     | 297     |
| <b>Breeding does</b>         | 41     | 39      | 39     | 43     | 41     | 43      | 48      | 45      | 43      | 41      | 48      | 38      |

## Antibiotic use in terms of DDD<sub>VET</sub>/animal-year

Table A60. Antibiotic use in terms of DDD<sub>VET</sub>/animal-year from 2017 to 2020, by livestock sector

| Pharmacotherapeutic group                | Broiler farming sector |               |               |               | Turkey farming sector |               |               |               | Pig farming sector |               |               |               |
|--|------------------------|---------------|---------------|---------------|-----------------------|---------------|---------------|---------------|--------------------|---------------|---------------|---------------|
|  | 2017                   | 2018          | 2019          | 2020          | 2017                  | 2018          | 2019          | 2020          | 2017               | 2018          | 2019          | 2020          |
| <b>1st-choice antibiotics</b>            | <b>3.79</b>            | <b>3.73</b>   | <b>3.86</b>   | <b>3.76</b>   | <b>11.37</b>          | <b>15.15</b>  | <b>15.43</b>  | <b>12.83</b>  | <b>6.62</b>        | <b>6.64</b>   | <b>6.30</b>   | <b>6.11</b>   |
| <b>As a proportion of overall AB use</b> | <b>35.15%</b>          | <b>32.78%</b> | <b>34.55%</b> | <b>35.62%</b> | <b>49.48%</b>         | <b>60.76%</b> | <b>57.68%</b> | <b>71.14%</b> | <b>77.72%</b>      | <b>77.73%</b> | <b>78.89%</b> | <b>74.58%</b> |
| Amphenicols                              | *                      | *             | *             | *             | *                     | *             | *             | *             | 0.19               | 0.19          | 0.19          | 0.23          |
| Macrolides/lincosamides                  | 0.09                   | 0.07          | 0.05          | 0.11          | *                     | *             | *             | *             | 0.85               | 0.85          | 0.95          | 0.85          |
| Penicillins                              | 0.58                   | 0.43          | 0.86          | 0.87          | 1.61                  | 2.58          | 1.58          | 0.81          | 0.54               | 0.56          | 0.49          | 0.49          |
| Pleuromutilins                           | *                      | *             | *             | *             | 0.14                  | 0.17          | 0.00          | *             | 0.10               | 0.13          | 0.10          | 0.04          |
| Tetracyclines                            | 1.27                   | 1.42          | 1.17          | 1.32          | 9.20                  | 11.98         | 13.42         | 11.83         | 3.42               | 3.25          | 2.96          | 2.95          |
| Trimethoprim/sulfonamides                | 1.86                   | 1.81          | 1.78          | 1.46          | 0.42                  | 0.43          | 0.43          | 0.19          | 1.51               | 1.65          | 1.60          | 1.55          |
| <b>2nd-choice antibiotics</b>            | <b>6.92</b>            | <b>7.57</b>   | <b>7.24</b>   | <b>6.73</b>   | <b>10.54</b>          | <b>9.04</b>   | <b>10.72</b>  | <b>4.74</b>   | <b>1.59</b>        | <b>1.53</b>   | <b>1.30</b>   | <b>1.66</b>   |
| <b>As a proportion of overall AB use</b> | <b>64.17%</b>          | <b>66.42%</b> | <b>64.80%</b> | <b>63.76%</b> | <b>45.89%</b>         | <b>36.24%</b> | <b>40.07%</b> | <b>26.30%</b> | <b>18.64%</b>      | <b>17.93%</b> | <b>16.25%</b> | <b>20.25%</b> |
| Aminoglycosides                          | 0.03                   | 0.01          | 0.01          | 0.00          | 0.01                  | 0.01          | 0.00          | 0.02          | 0.00               | 0.01          | 0.01          | 0.01          |
| Aminopenicillins                         | 5.53                   | 5.74          | 5.91          | 5.49          | 8.95                  | 7.44          | 8.81          | 3.79          | 1.01               | 0.94          | 0.78          | 0.98          |
| 1st- and 2nd-gen. cephalosporins         | *                      | *             | *             | *             | *                     | *             | *             | *             | *                  | *             | *             | *             |
| Quinolones                               | 1.23                   | 1.64          | 1.16          | 1.12          | 0.19                  | 0.13          | 0.11          | *             | 0.02               | 0.02          | 0.03          | 0.02          |
| Fixed-dose combinations                  | 0.02                   | 0.03          | 0.01          | 0.02          | *                     | *             | *             | *             | 0.03               | 0.02          | 0.02          | 0.02          |
| Long-acting macrolides                   | *                      | *             | *             | *             | *                     | *             | *             | *             | 0.53               | 0.55          | 0.45          | 0.64          |
| Macrolides/lincosamides                  | 0.11                   | 0.15          | 0.16          | 0.10          | 1.40                  | 1.46          | 1.80          | 0.93          | *                  | *             | *             | *             |
| <b>3rd-choice antibiotics</b>            | <b>0.07</b>            | <b>0.09</b>   | <b>0.07</b>   | <b>0.07</b>   | <b>1.06</b>           | <b>0.75</b>   | <b>0.60</b>   | <b>0.46</b>   | <b>0.31</b>        | <b>0.37</b>   | <b>0.39</b>   | <b>0.42</b>   |
| <b>As a proportion of overall AB use</b> | <b>0.68%</b>           | <b>0.80%</b>  | <b>0.65%</b>  | <b>0.62%</b>  | <b>4.63%</b>          | <b>2.99%</b>  | <b>2.25%</b>  | <b>2.56%</b>  | <b>3.64%</b>       | <b>4.33%</b>  | <b>4.86%</b>  | <b>5.17%</b>  |
| 3rd- and 4th-gen. cephalosporins         | *                      | *             | *             | *             | *                     | *             | *             | *             | *                  | *             | *             | *             |
| Fluoroquinolones                         | 0.05                   | 0.06          | 0.04          | 0.03          | 1.06                  | 0.75          | 0.59          | 0.46          | 0.00               | 0.00          | 0.00          | 0.00          |
| Polymyxins                               | 0.02                   | 0.03          | 0.03          | 0.03          | 0.00                  | 0.00          | 0.01          | *             | 0.31               | 0.37          | 0.39          | 0.42          |
| <b>Overall antibiotic use</b>            | <b>10.78</b>           | <b>11.39</b>  | <b>11.17</b>  | <b>10.56</b>  | <b>22.98</b>          | <b>24.94</b>  | <b>26.75</b>  | <b>18.03</b>  | <b>8.52</b>        | <b>8.54</b>   | <b>7.99</b>   | <b>8.20</b>   |

Table A60. (continued)

| Pharmacotherapeutic group                | Dairy cattle farming sector |               |               |               | Veal farming sector |               |               |               | Non-dairy cattle farming sector |               |               |               |
|--|-----------------------------|---------------|---------------|---------------|---------------------|---------------|---------------|---------------|---------------------------------|---------------|---------------|---------------|
|  | 2017                        | 2018          | 2019          | 2020          | 2017                | 2018          | 2019          | 2020          | 2017                            | 2018          | 2019          | 2020          |
| <b>1st-choice antibiotics</b>            | <b>0.92</b>                 | <b>0.93</b>   | <b>0.86</b>   | <b>0.92</b>   | <b>18.52</b>        | <b>16.82</b>  | <b>14.43</b>  | <b>13.24</b>  | <b>0.95</b>                     | <b>0.92</b>   | <b>0.68</b>   | <b>0.61</b>   |
| <b>As a proportion of overall AB use</b> | <b>89.76%</b>               | <b>88.69%</b> | <b>87.11%</b> | <b>85.08%</b> | <b>87.61%</b>       | <b>88.07%</b> | <b>86.93%</b> | <b>86.23%</b> | <b>86.12%</b>                   | <b>88.58%</b> | <b>86.82%</b> | <b>84.81%</b> |
| Amphenicols                              | 0.04                        | 0.04          | 0.04          | 0.04          | 1.11                | 1.03          | 0.98          | 0.86          | 0.08                            | 0.08          | 0.06          | 0.05          |
| Macrolides/lincosamides                  | 0.03                        | 0.03          | 0.03          | 0.05          | 3.94                | 3.68          | 3.50          | 3.22          | 0.19                            | 0.16          | 0.13          | 0.11          |
| Penicillins                              | 0.15                        | 0.17          | 0.17          | 0.19          | 0.26                | 0.24          | 0.21          | 0.20          | 0.05                            | 0.04          | 0.04          | 0.04          |
| Pleuromutilins                           | *                           | *             | *             | *             | *                   | *             | *             | *             | *                               | *             | *             | *             |
| Tetracyclines                            | 0.22                        | 0.22          | 0.21          | 0.23          | 10.61               | 9.84          | 7.79          | 7.38          | 0.48                            | 0.54          | 0.37          | 0.35          |
| Trimethoprim/sulfonamides                | 0.48                        | 0.48          | 0.41          | 0.42          | 2.61                | 2.03          | 1.94          | 1.58          | 0.15                            | 0.10          | 0.09          | 0.07          |
| <b>2nd-choice antibiotics</b>            | <b>0.10</b>                 | <b>0.11</b>   | <b>0.12</b>   | <b>0.15</b>   | <b>2.57</b>         | <b>2.24</b>   | <b>2.15</b>   | <b>2.09</b>   | <b>0.15</b>                     | <b>0.11</b>   | <b>0.10</b>   | <b>0.11</b>   |
| <b>As a proportion of overall AB use</b> | <b>9.53%</b>                | <b>10.59%</b> | <b>12.18%</b> | <b>14.11%</b> | <b>12.13%</b>       | <b>11.71%</b> | <b>12.95%</b> | <b>13.61%</b> | <b>13.65%</b>                   | <b>10.94%</b> | <b>12.76%</b> | <b>14.60%</b> |
| Aminoglycosides                          | 0.01                        | 0.01          | 0.01          | 0.01          | 0.09                | 0.08          | 0.07          | 0.06          | 0.01                            | 0.00          | 0.00          | 0.00          |
| Aminopenicillins                         | 0.05                        | 0.07          | 0.09          | 0.11          | 1.59                | 1.50          | 1.39          | 1.35          | 0.07                            | 0.06          | 0.05          | 0.06          |
| 1st- and 2nd-gen. cephalosporins         | *                           | 0.00          | *             | *             | *                   | *             | *             | *             | *                               | 0.00          | *             | *             |
| Quinolones                               | 0.00                        | 0.00          | 0.00          | 0.00          | 0.74                | 0.47          | 0.52          | 0.55          | 0.03                            | 0.02          | 0.02          | 0.02          |
| Fixed-dose combinations                  | 0.04                        | 0.02          | 0.02          | 0.02          | 0.01                | 0.00          | 0.00          | 0.00          | 0.03                            | 0.02          | 0.01          | 0.01          |
| Long-acting macrolides                   | 0.01                        | 0.01          | 0.01          | 0.01          | 0.14                | 0.18          | 0.16          | 0.13          | 0.01                            | 0.02          | 0.01          | 0.01          |
| Macrolides/lincosamides                  | *                           | *             | *             | *             | *                   | *             | *             | *             | *                               | *             | *             | *             |
| <b>3rd-choice antibiotics</b>            | <b>0.01</b>                 | <b>0.01</b>   | <b>0.01</b>   | <b>0.01</b>   | <b>0.06</b>         | <b>0.04</b>   | <b>0.02</b>   | <b>0.02</b>   | <b>0.00</b>                     | <b>0.00</b>   | <b>0.00</b>   | <b>0.00</b>   |
| <b>As a proportion of overall AB use</b> | <b>0.70%</b>                | <b>0.72%</b>  | <b>0.71%</b>  | <b>0.81%</b>  | <b>0.26%</b>        | <b>0.22%</b>  | <b>0.12%</b>  | <b>0.16%</b>  | <b>0.23%</b>                    | <b>0.47%</b>  | <b>0.42%</b>  | <b>0.59%</b>  |
| 3rd- and 4th-gen. cephalosporins         | 0.00                        | 0.00          | 0.00          | 0.00          | *                   | *             | *             | *             | *                               | *             | *             | *             |
| Fluoroquinolones                         | 0.00                        | 0.00          | 0.00          | 0.00          | 0.03                | 0.02          | 0.01          | 0.01          | 0.00                            | 0.00          | 0.00          | 0.00          |
| Polymyxins                               | 0.00                        | 0.00          | 0.00          | 0.00          | 0.02                | 0.02          | 0.01          | 0.02          | 0.00                            | 0.00          | 0.00          | 0.00          |
| <b>Overall antibiotic use</b>            | <b>1.03</b>                 | <b>1.05</b>   | <b>0.99</b>   | <b>1.09</b>   | <b>21.15</b>        | <b>19.10</b>  | <b>16.60</b>  | <b>15.36</b>  | <b>1.10</b>                     | <b>1.04</b>   | <b>0.79</b>   | <b>0.72</b>   |

## Phased implementation of the new benchmark thresholds

Table A61. Transitional benchmark thresholds for farms with sows and piglets

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

Table A62. Transitional benchmark thresholds for farms with fattening pigs

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

Table A63. Transitional benchmark thresholds for farms with weaner pigs

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

Table A64. Transitional benchmark thresholds for broiler farms with conventional breeds\*

| Phase | Year      | Signaling threshold | Action threshold |
|-------|-----------|---------------------|------------------|
| 1     | 2019-2021 | 14                  | 26               |
| 2     | 2022-2023 | 12                  | 24               |
| 3     | 2024-2025 | 10                  | 20               |

Table A65. Transitional benchmark thresholds for broiler farms with alternative breeds\*

| Phase   | Year      | Signaling threshold | Action threshold |
|---------|-----------|---------------------|------------------|
| 1       | 2019-2021 | 8                   | 15               |
| 2 and 3 | 2022-2025 | 8                   | 12               |

Table A66. Transitional benchmark thresholds for turkey\*

| 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 the broiler farms concerned to enter the next phase.

## Standardized body weights

Table A67. Standardized average body weights used for determining the  $DDDA_{NAT}$  values, by livestock sector and production category

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

<sup>1</sup> 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 A68. Standardized average body weights used by the SDa for determining the DDDA<sub>F</sub> values, by livestock sector and production category

| Livestock sector                          | Production category  | Age group                   | Standardized body weight in kg <sup>1</sup> |
|---|--|-----------------------------|---|
| <b>Veal farming sector</b>                | 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   |
| <b>Pig farming sector</b>                 | 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  |
| <b>Broiler farming sector<sup>2</sup></b> | Conventional broilers  | 0 - 45 days                 | n/a   |
|   | Alternative broilers   | 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   |
| <b>Layer farming sector<sup>2</sup></b>   | 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   |
| <b>Turkey farming sector<sup>2</sup></b>  | Toms   |                             | n/a   |
|   | Hens   |                             | n/a   |
| <b>Cattle farming sector<sup>3</sup></b>  | 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  |
| <b>Rabbit farming sector</b>              | 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   |

<sup>1</sup> 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).

<sup>2</sup> As of 2017, the body weights used for determining poultry farms' DDDA<sub>F</sub> 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.

<sup>3</sup> 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 1 – 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<sub>F</sub> data) have been used.
- The 2011 DDDA<sub>NAT</sub> values were estimated as follows:
  - o For the veal and pig farming sectors: by means of the 2011:2012 DDDA<sub>F</sub> ratio (with weighting based on the average number of kilograms present at individual farms);
  - o For the dairy cattle farming sector: by means of the 2011:2012 DD/AY ratio;
  - o 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<sub>NAT</sub> 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<sub>F</sub> values.





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**Appendix to the report**

**Usage of Antibiotics in Agricultural Livestock in the Netherlands in 2019**

Trends and benchmarking of livestock farms and veterinarians

SDa/1156/2021

The Netherlands Veterinary Medicines Institute, 2021

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