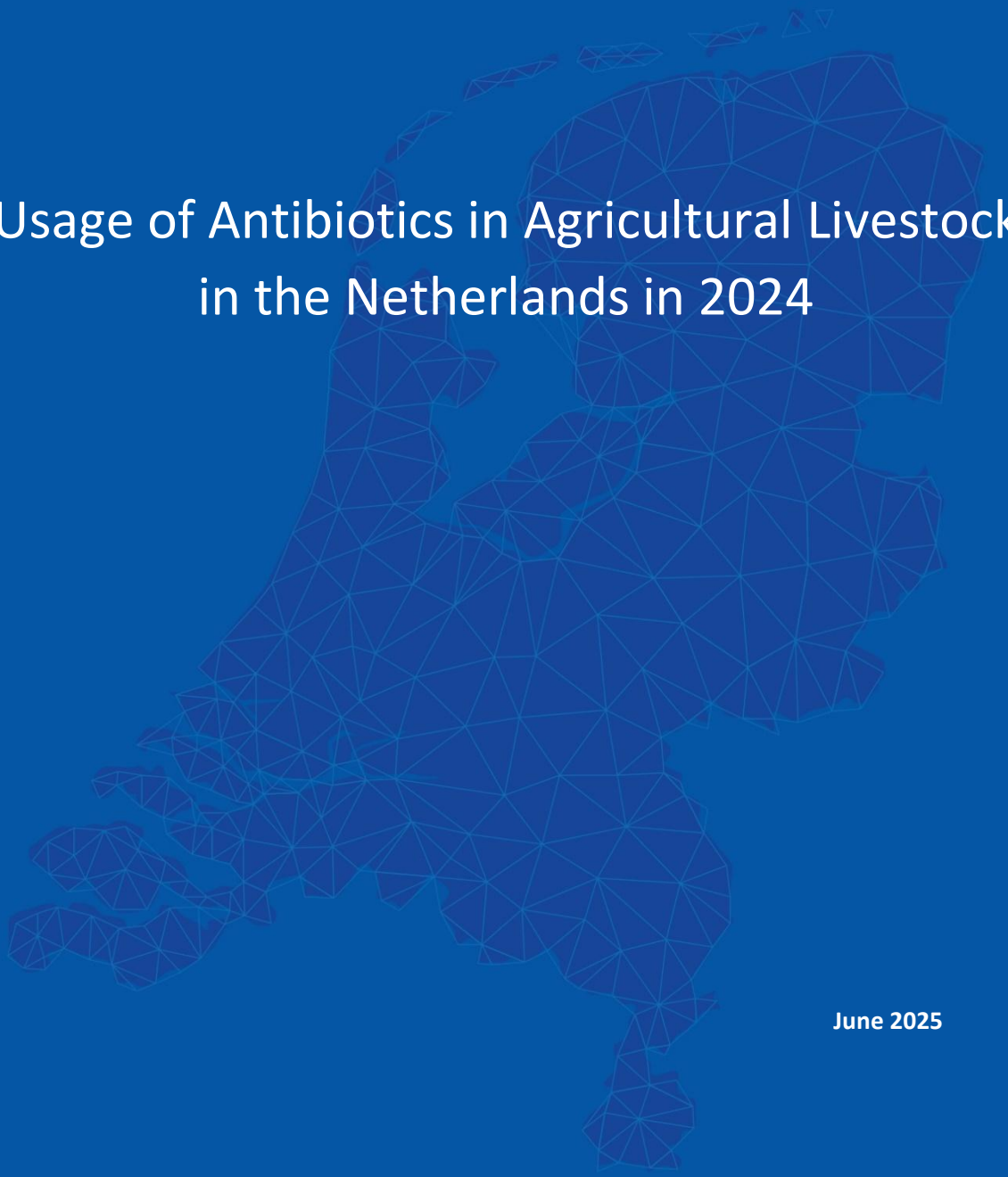
Autoriteit Diergeneesmiddelen

# Usage of Antibiotics in Agricultural Livestock in the Netherlands in 2024



**June 2025**

Autoriteit Diergeneesmiddelen

# Reader's guide

This is a copy of the SDa report on antibiotic usage in agricultural livestock in the Netherlands in 2024, drawn up by the SDa expert panel.

The report and a cover letter by the SDa board have been combined in a single document, with the cover letter preceding the SDa expert panel's report. Additional information, including data on the amounts of antibiotics used in the various livestock sectors and information on veterinarians' prescription patterns, can be found in the appendices to the report, which are available online.

Autoriteit Diergeneesmiddelen

Utrecht, June 2025

Re: SDa report *Usage of Antibiotics in Agricultural Livestock in the Netherlands in 2024*

Dear Reader,

The Netherlands Veterinary Medicines Institute (SDa) is pleased to present you with the report *Usage of Antibiotics in Agricultural Livestock in the Netherlands in 2024*. The SDa monitors the amounts of antibiotics used in the Dutch cattle, pig, poultry, rabbit and veal farming sectors, records sector-specific antibiotic usage trends over time, establishes benchmark thresholds, and reports on livestock farms' and veterinarians' benchmarking results.

In 2024, antibiotic use in the broiler and rabbit farming sectors declined. In the veal and cattle farming sectors, antibiotic use was similar to the 2023 level. Antibiotic use in the pig farming sector increased slightly in 2024. A more pronounced increase can be observed for the turkey farming sector, as a result of some farms with low antibiotic usage levels having ceased their operations. This is the first SDa report in which antibiotic usage data for the duck farming sector are included. Antibiotic use in this sector is low.
The total amount of antibiotics sold within the Dutch livestock sector rose by 4.0% in 2024. Compared to the amount sold in the reference year 2009, the current sales volume represents a 75.5% reduction.
Sales of antibiotics classified as last-resort antibiotics for humans (i.e. fluoroquinolones and third- and fourth-generation cephalosporins) remained low and stable. Colistin use continued to decline for the fourth consecutive year.

*Recording of goat farming sector data*
The SDa expert panel was not able to include data on the amounts of antibiotics used in the goat farming sector in this year's report, as in recent months, it has become apparent that the recorded goat farming sector data are incomplete. The SDa proposes to carry out an audit into the quality and completeness of the sector's antibiotic usage data and the recording of these data in databases – similar to audits previously conducted for other monitored livestock sectors. The SDa expert panel will resume its reporting on antibiotic use in the goat farming sector once all antibiotic usage data for this sector have been provided to the SDa. The SDa expert panel hopes it will be able to do so later this year.

*Persistently high usage levels and persistently high prescription patterns*
Livestock farms and veterinarians that have been included in the action zone for at least two consecutive years are classified as having persistently high usage levels and persistently high prescription patterns, respectively. In 2024, all livestock sectors except the veal farming sector saw a decline in the proportion of farms with persistently high usage levels. While antibiotic use in the veal farming sector was similar to the 2023 level, differences in usage levels between individual veal farms increased in 2024. This has resulted in a rise in both the proportion of farms with persistently high usage levels and the proportion of veterinarians with persistently high prescription patterns within this livestock sector. In order to reduce antibiotic use at veal farms, it is essential to implement measures aimed at preventing the transmission of pathogens from dairy cattle farms to veal farms, and within veal farms.

*Revision of the benchmark indicator for veterinarians*
Up until this SDa report, two indicators were used to provide insight into veterinarians' prescription patterns: the Veterinary Benchmark Indicator (VBI) and the $DDDA_{VET}$. The VBI was used for benchmarking purposes, while the $DDDA_{VET}$ was used for monitoring trends. Starting with this SDa report, the $DDDA_{VET}$ will be the main indicator, as it can be used for both trend monitoring and benchmarking purposes. In addition, livestock farms with persistently high usage levels, which were excluded from VBI calculations, are included when determining a veterinarian's $DDDA_{VET}$ value.

*Monitoring of antibiotic use in animal sectors across Europe*
2024 was the first year in which the SDa reported sector-specific antibiotic usage data to the European Union, as required under Regulation (EU) 2019/6, commonly referred to as the Veterinary Medicinal Products Regulation (VMPR). Data pertaining to antibiotic use in cattle (including veal calves), chickens, pigs and turkeys have recently been published by

EMA. As of 2027, data on antibiotic use in goats, sheep, ducks and horses will also be reported to the European Union. Three years later, the reporting of usage data will expand to include antibiotic use in dogs and cats. The SDa is involved in developing potential scenarios for monitoring antibiotic use in the animal species that are not yet subject to monitoring.

*Conclusion*

The SDa welcomes the fact that the majority of farms in the poultry, cattle, and pig farming sectors recorded antibiotic usage levels consistent with acceptable use[1]. However, a substantial number of veal farms, farms with weaner pigs, and broiler farms with conventional breeds have not yet achieved usage levels consistent with acceptable use. The SDa urges the livestock sectors or subsectors concerned to continue their reduction efforts in order to ensure that antibiotic use in the weaner pigs production category, at veal farms, and at broiler farms with conventional breeds will also be characterized by low usage levels, limited variation between farms, and limited usage level fluctuations over time.

With regard to the issues identified in the goat farming sector, the SDa urges the sector, veterinarians and the authorities to promptly assess the scale of the problems by means of an audit and to resolve the issues.

In light of the overall objective of preventing the emergence and spread of resistant bacteria, reducing the amounts of antibiotics used and prescribed at livestock farms with persistently high usage levels – particularly in the veal farming sector – will remain the main focus in the next few years.

On behalf of the SDa board,

Yours sincerely,

H.M. Meijdam, LLM
Chair

H.M.G. Schreurs, DVM, PhD
Director

[1] Types of farms or production categories with usage levels consistent with acceptable use are characterized by low or very low antibiotic usage levels ($DDDA_F$ values), limited variation in usage levels between individual livestock farms, and limited usage level fluctuations over time. For these types of farms or production categories, the SDa only establishes an action threshold. Livestock farms with $DDDA_F$ values exceeding this threshold are required to take action in order to reduce their antibiotic usage levels.

Autoriteit Diergeneesmiddelen

# REPORT

## Usage of Antibiotics in Agricultural Livestock in the Netherlands in 2024

Trends and benchmarking of livestock farms and veterinarians

**SDa expert panel**

**June 2025**

# Preface

This is a copy of the SDa report *Usage of Antibiotics in Agricultural Livestock in the Netherlands in 2024*. It was drawn up by the SDa expert panel to promote transparency and provide insight into antibiotic usage at Dutch livestock farms. This report presents the SDa expert panel's main findings with regard to antibiotic usage in the Dutch livestock sector in 2024. Underlying data regarding the various livestock sectors and veterinarians active in these sectors are included in Appendix 1, which is available on the SDa website.

With its benchmarking activities and annual report, the SDa aims to promote prudent usage of antibiotics by offering livestock farmers and veterinarians insight into their performance in terms of antibiotic usage levels and prescription patterns, respectively.

Since several years, the annual report also includes information on livestock farms with persistently high antibiotic usage levels (i.e. $DDDA_F$ values that have exceeded the action threshold for at least two years in a row). This has enabled the SDa to observe trends in the proportions of farms with persistently high usage levels. These trends are also discussed in this year's report.

Following the SDa expert panel's evaluation of veterinarians' prescription patterns and the SDa's associated benchmarking method, this year's report addresses the introduction of the $DDDA_{VET}$, the SDa's new indicator for benchmarking veterinarians' prescription patterns. $DDDA_{VET}$-based long-term prescription pattern trends are also included in this report. More information on veterinarians' prescription patterns and the SDa expert panel's evaluation of the associated benchmarking method is available in Appendix 2.

Colophon:
Members of the SDa expert panel:
Prof. M.J.M. Bonten, PhD, medical microbiologist
I.M. van Geijlswijk, PhD, hospital pharmacist - clinical pharmacologist
Prof. D.J.J. Heederik, PhD, epidemiologist and chair of the SDa expert panel
A.J. van Hout-van Dijk, DVM, PhD, veterinarian/senior researcher
Prof. L. Mughini-Gras, DVM, PhD, veterinarian/epidemiologist

Research staff:
P. Sanders, secretary of the SDa expert panel

Autoriteit Diergeneesmiddelen

# Contents

## Summary

The total amount of antibiotics used in the monitored livestock sectors, measured in kilograms of active substances, increased slightly in 2024. The total amount of antibiotics sold within these sectors, also measured in kilograms of active substances, rose by 4.0% in 2024. Compared to the amount sold in the reference year 2009, the current sales volume represents a 75.5% reduction, which is slightly smaller than the sales volume reduction recorded in last year's report.

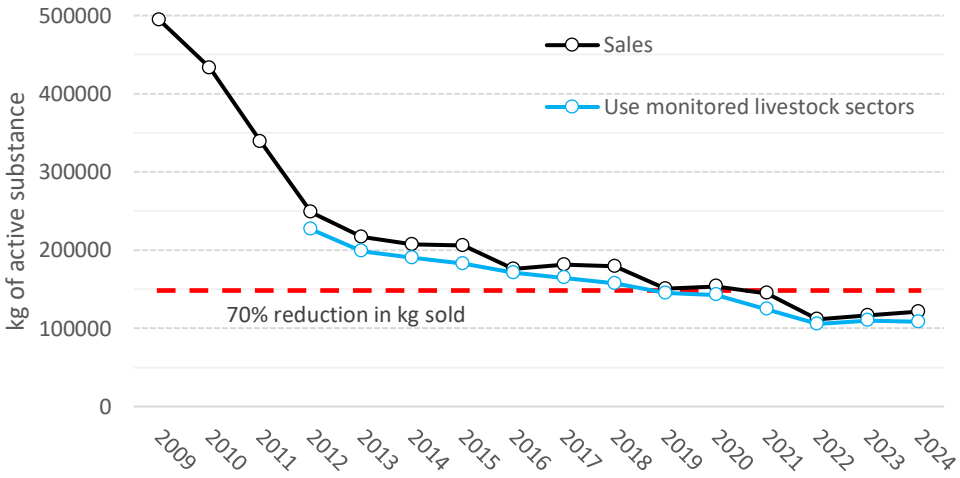
Sector-level overall antibiotic use, measured in Defined Daily Doses Animal ($DDDA_{NAT}$), did show some variation in 2024, but the overall picture remained largely stable. Antibiotic use in the broiler and rabbit farming sectors declined in 2024. In the dairy cattle and non-dairy cattle farming sectors, antibiotic use was low and similar to the 2023 level. Antibiotic use in the veal farming sector was high, but remained stable. 2024 saw $DDDA_{NAT}$ increases in the pig and turkey farming sectors, with the most notable increase occurring in the turkey farming sector. This is the first SDa report in which antibiotic usage data for the duck farming sector are included. Antibiotic use in this livestock sector is low.

In the goat farming sector, new issues were identified regarding the recording of prescribed antibiotics, leading to a systematic underestimation of the amounts of antibiotics used. The extent of these problems and their underlying causes are not yet known, and the issues could not be resolved in time for this year's SDa report. For this reason, the SDa expert panel has made the exceptional decision not to include data on the amounts of antibiotics used in the goat farming sector in this year's report. The SDa expert panel's reporting on goat farming sector usage data will only resume once the situation has been clarified and resolved. The issues call for an audit of the quality and completeness of the sector's antibiotic usage data and the recording of these data in databases, in order to swiftly identify areas for improvement in the data recording process. In the past, similar audits were conducted shortly after the establishment of the main livestock sectors' data collection systems.

In 2024, almost all livestock sectors saw a decline in the proportion of farms with persistently high usage levels (i.e. $DDDA_F$ values that had exceeded the SDa-defined action threshold for two years in a row). According to the SDa expert panel, further reducing the number of farms with persistently high usage levels may help achieve a substantial additional reduction in antibiotic use. Unlike the other livestock sectors, the

veal farming sector saw an increase in the proportion of farms with persistently high usage levels. In addition, the proportion of veal farms with action zone usage levels remained high in 2024. These findings indicate there is still considerable room for improvement regarding antibiotic use at veal farms.

***Figure 1. Trends in the amounts of antibiotics sold and used from 2009 (reference year) to 2024***




**Usage of antibiotics in the main food-producing livestock sectors**

**Veal farming sector** – In 2024, antibiotic use in the veal farming sector amounted to 15.9 $DDDA_{NAT}$, similar to the year before. A downward trend has not been observed for some time, even though a further reduction is required given the number of veal farms in the action zone and the proportion of farms with persistently high usage levels. The sector's lowest $DDDA_{NAT}$ value was recorded for 2020.
Mean antibiotic use at white veal farms, rosé veal starter farms, and rosé veal fattening farms increased slightly in 2024, and this was accompanied by more pronounced $DDDA_F$ differences between individual farms. In 2024, the proportion of farms with persistently high usage levels increased across all types of veal farms. The action plan implemented by the veal farming sector to reduce the number of farms with persistently high usage levels has not had the desired outcome. The combination of consistently high antibiotic usage and a rising number of farms with persistently high usage levels calls for additional measures to reduce antibiotic use in the veal farming sector. Based on current knowledge, further reductions in antibiotic use can only be achieved through changes in

how the veal production chain is structured and its connection to the dairy farming sector. A set of pilot studies to identify potential changes to promote a healthy veal production chain, performed as part of the *Pilots gezonde kalverketen* scheme, is currently in the process of being finalized. The SDa expert panel hopes that the outcomes of these studies will provide important insights into the changes required to help achieve a substantial reduction in antibiotic use.

**Broiler farming sector** – Antibiotic use in the broiler farming sector declined from 6.9 $DDDA_{NAT}$ in 2023 to 5.2 $DDDA_{NAT}$ in 2024 (-24.8%). This has resulted in the lowest $DDDA_{NAT}$ value in the sector's monitoring history. The shift from conventional toward slower growing breeds has contributed substantially to the decline in antibiotic use observed for the broiler farming sector as a whole. Although usage of second-choice antibiotics declined in 2024, it remained relatively high, with second-choice antibiotics accounting for 65% of the sector's antibiotic use in terms of $DDDA_{NAT}$.

2024 saw a decline in median antibiotic use at broiler farms with conventional breeds, and the SDa expert panel hopes this marks the beginning of a downward trend. Although the proportion of broiler farms with conventional breeds with action zone usage levels decreased, as did the proportion of farms with persistently high usage levels, it remained relatively high. With a mean $DDDA_F$ value of 1.5, antibiotic use at broiler farms with slower growing breeds remained stable at a level that is considered acceptable. Hardly any of these broiler farms had persistently high usage levels.
In 2024, mean antibiotic use at broiler parent/grandparent stock rearing farms was low (5.4 $DDDA_F$), but with relatively large differences in usage levels between individual farms. These differences increased slightly in 2024, indicating that further reductions in antibiotic use should be feasible. Antibiotic use at parent/grandparent stock production farms was low (mean $DDDA_F$ value of 2.4), with limited between-farm differences in usage levels.

**Pig farming sector** – In 2024, antibiotic use in the pig farming sector amounted to 6.6 $DDDA_{NAT}$, a 0.7 $DDDA_{NAT}$ (11.8%) increase from the 2023 level. As yet, the SDa expert panel does not consider this rise to be alarming, given that antibiotic use in the pig farming sector remained low. The SDa expert panel will, however, keep an eye on any future developments in this regard. Identifying potential drivers of this $DDDA_{NAT}$ rise may provide insight into how further increases can be prevented. For each of the production categories, the proportion of farms with action zone usage levels was similar to the one recorded for 2023. For the weaner pigs production category, the proportion of farms with persistently high usage levels declined slightly, to 7%. The benchmark thresholds were reviewed by the SDa expert panel at the end of 2024. The variation in antibiotic usage

levels across farms with weaner pigs is currently still too substantial to allow for the establishment of a benchmark threshold representing acceptable use. Starting from 2026, the weaner pigs production category will be benchmarked by means of a new provisional benchmark threshold of 15 $DDDA_F$, which the SDa will use for 3 years. For the sows and suckling piglets production category and the fattening pigs production category, the SDa will continue to use the current 5 $DDDA_F$ benchmark threshold representing acceptable use.

**Goat farming sector** – As stated earlier, this year's report does not include data on the amounts of antibiotics used in the goat farming sector. Issues regarding the completeness and quality of provided goat farming sector data had already been mentioned in previous reports, but recently, new issues were identified regarding the recording of prescription data. It became apparent that antibiotics prescribed by substitute veterinarians are not always recorded in the designated database. The latter issue in particular leads to systematic underreporting of the amounts of antibiotics used. There is no indication that veterinarians are failing to report usage; the issue appears to be related to communication between veterinary practices and the designated databases. This has made it clear that antibiotic use in the goat farming sector has been underreported, although the extent of the underreporting is not yet known. Previous shortcomings were related to the goat farming sector's data coverage, and were not expected to necessarily result in a systematic underestimation of the sector's farm level antibiotic usage. Together, the previous and newly identified shortcomings in the quality and completeness of available data mean that the SDa will not be able to report on antibiotic use in the goat farming sector until the issues have been resolved.
The SDa expert panel urges the goat farming sector, veterinarians and the authorities to promptly assess the scale of these problems by means of an audit and to resolve the identified shortcomings. It is important to note in this respect that under EU legislation, monitoring of antibiotic usage in the goat farming sector will become mandatory in 2026.

**Cattle farming sector** – In 2024, antibiotic use in the dairy cattle and non-dairy cattle farming sectors remained low and stable, with $DDDA_{NAT}$ values of 3.26 and 0.25, respectively. Only approximately 5% of cattle farms recorded action zone usage levels, and only a small minority of cattle farms had persistently high usage levels in 2024.

**Layer farming sector** – Antibiotic use at layer farms remained low and stable in 2024, with a mean $DDDA_F$ value of 1.8. The majority of layer farms (77%) did not record any antibiotic use for 2024. Antibiotic use at pullet rearing farms was low, with limited between-farm differences in usage levels.

Mean antibiotic use at layer parent/grandparent stock rearing farms increased to 17.6 $DDDA_F$, as a result of several farms with relatively high usage levels. In such a small subsector (with only 38 farms), a limited number of farms can exert a considerable influence on the mean $DDDA_F$ value. Given that most layer parent/grandparent stock rearing farms (66%) did not record any antibiotic use for 2024, it should be feasible to realize usage level reductions at the farms with high $DDDA_F$ values. The SDa urges the livestock sector to take action accordingly. Antibiotic use at layer parent/grandparent stock production farms was low, with a mean antibiotic usage level of 2.0 $DDDA_F$.

**Usage of antibiotics in smaller food-producing livestock sectors**

**Rabbit farming sector** – In 2024, antibiotic use in the rabbit farming sector declined by 3.2 $DDDA_{NAT}$ (-12.2%). It has reached the lowest level in the sector's monitoring history, which began in 2016, although still relatively high at 22.6 $DDDA_{NAT}$. 2024 also saw a decline in the proportion of rabbit farms with action zone use values. The benchmark threshold for rabbit farms was evaluated by the SDa expert panel in 2024, and it was decided not to adjust the sector's current 30 $DDDA_F$ benchmark threshold just yet. The benchmark threshold will be reevaluated later this year.

**Turkey farming sector** – While the turkey farming sector's 2023 $DDDA_{NAT}$ value had suggested the beginning of a downward trend, the 2024 data paint a different picture, showing a 2.6 $DDDA_{NAT}$ (43.1%) increase. Despite this rise, the sector's current $DDDA_{NAT}$ value of 8.7 remains below the 2022 level. Farm level usage also rose in 2024, as a result of some farms with low antibiotic usage levels having ceased their operations. This once again shows that in a small livestock sector, just a few farms can have a considerable impact on the sector's mean $DDDA_F$ value.
Turkey farms are still benchmarked using transitional benchmark thresholds, that is, benchmark thresholds negotiated with the Ministry of Agriculture, Fisheries, Food Security and Nature to help farmers move toward their SDa-defined action threshold in a more gradual fashion. The SDa expert panel recently evaluated the turkey farming sector's current benchmark thresholds. Following this evaluation, the SDa expert panel has recommended to speed up the phased implementation of the SDa-defined benchmark threshold and start using its 10 $DDDA_F$ action threshold in 2026. This recommendation was made because the majority of turkey farms are already recording usage levels well below this 10 $DDDA_F$ level, with a median usage level of 5.5 $DDDA_F$ for 2024.

**Duck farming sector** – In 2024, antibiotic use in the duck farming sector was very low. Only one of 43 farms recorded usage of antibiotics. The other 42 farms did not record any antibiotic use for 2024.

**Usage of critically important agents**

In most livestock sectors, use of fluoroquinolones and third- and fourth-generation cephalosporins is low (<0,3 $DDDA_{NAT}$) and stable. In 2024, colistin use continued to decline for the fourth consecutive year. No or virtually no colistin was used in the broiler, turkey, dairy cattle, veal, non-dairy cattle, and rabbit farming sectors. While the weaner pigs production category is the main contributor to colistin use in the pig farming sector, mean colistin use in this production category continued to decline in 2024, to 0.9 $DDDA_F$ (a 0.3 $DDDA_F$ reduction). Mean colistin use at layer farms amounted to 0.5 $DDDA_F$, similar to the 2023 level. Colistin use in laying hens exceeded EMA's benchmark threshold, and should therefore be addressed.

In addition to fluoroquinolones, third- and fourth-generation cephalosporins, and colistin, the EMA Antimicrobial Advice Ad Hoc Expert Group's (AMEG) classification also lists "other quinolones" as Category B antibiotics, that is, antibiotics that are critically important in human medicine. Use of AMEG Category B antibiotics in animals should be restricted (EMA, 2019). Usage of flumequine (a quinolone) induces resistance mechanisms similar to those induced by enrofloxacin (a fluoroquinolone, and hence categorized as a third-choice antibiotic in the Netherlands) (Swinkels et al., 2024). In the Netherlands, quinolones are currently categorized as second-choice antibiotics. Their categorization is based on the Dutch WVAB guideline, which was drawn up by the Veterinary Antibiotic Use Policy Working Group (WVAB) of the Royal Dutch Society for Veterinary Medicine (KNMvD). A new WVAB committee has recently been formed. One of its objectives is to integrate the AMEG classification in the Dutch classification system, which categorizes veterinary antibiotics into first-, second- and third-choice antibiotics. Quinolone use in the broiler and veal farming sectors declined in 2024, while in the other livestock sectors, quinolones are used only sporadically or not at all.

**Veterinarians' prescription patterns**

In 2024, prescribing levels of veterinarians of dairy cattle, non-dairy cattle, slower growing broiler breeds, sows and suckling piglets, and fattening pigs were low (with mean prescribing levels ≤3.3 $DDDA_{VET}$), and differences between individual veterinarians were limited.

Relatively high prescribing levels were recorded for veterinarians of white veal calves and starter stage rosé veal calves, with mean $DDDA_{VET}$ values of 19.1 and 64.4, respectively, and the veterinarians also showed substantial variation in their 2024 $DDDA_{VET}$ values.

However, the mean prescribing level of veterinarians of starter stage rosé veal calves did decrease by 5.3 $DDDA_{VET}$ in 2024, and differences between individual veterinarians were less pronounced than the year before. The mean prescribing level of veterinarians of fattening stage rosé veal calves seems to have stabilized since 2023, following an upward trend between 2017 and 2022.

The mean $DDDA_{VET}$ value for veterinarians of weaner pigs increased from 13.3 in 2023 to 15.4 in 2024, and this mean $DDDA_{VET}$ increase was accompanied by more pronounced differences in prescribing levels between individual veterinarians.

For veterinarians of conventional broiler breeds, 2024 saw a reduction in prescribing level differences between individual veterinarians, and a slight decrease in their mean $DDDA_{VET}$ value. However, with individual prescribing levels ranging from 0 $DDDA_{VET}$ to over 19 $DDDA_{VET}$ for the 5% of veterinarians with the highest prescribing levels, these veterinarians still show a relatively high degree of variation. This suggests there is still room for additional prescribing level reductions.

Only a few veterinarians were active in the turkey farming sector. In 2024, their mean prescribing level increased from 6.3 to 8.2 $DDDA_{VET}$, following a pronounced reduction recorded for 2023.

**Prescription pattern differences between veterinary practices**

A study has shown that veterinarians' prescription patterns also vary considerably between veterinary practices. For this reason, the SDa expert panel recommends including the prescribing veterinarian's veterinary practice (using an anonymized identifier) when recording prescription data.

**Benchmarking of veterinarians**

The 2024 benchmarking results show that across all production categories, the majority of veterinarians have been included in the target zone. With regard to veterinarians of rosé veal calves and veterinarians of conventional broiler breeds, the proportion of veterinarians with action zone prescription patterns remains relatively high. They also show substantial inter-veterinarian prescription pattern differences, which suggests further prescribing level reductions should be feasible.

**Evaluation of the benchmarking method for veterinarians**

For the 2024 reporting year, the SDa continued to use two indicators for veterinarian-level data: the $DDDA_{VET}$ and the VBI. The $DDDA_{VET}$ was used to provide insight into prescription pattern trends, while the VBI was used for benchmarking purposes. The SDa expert panel evaluated the VBI in 2024, after which it decided to start using the $DDDA_{VET}$ for both trend monitoring and benchmarking purposes from 2025 onward. The main reasons for this decision were the $DDDA_{VET}$'s suitability for both purposes, and that $DDDA_{VET}$ values are easier to interpret for veterinarians.

**Expansion of antibiotic monitoring**

As of 2026, pursuant to Regulation (EU) 2019/6, the Netherlands will be legally required to collect data on the use of antimicrobial veterinary medicinal products in sheep, horses and goats, with mandatory reporting starting in 2027. In 2029, the monitoring obligation will expand to include dogs and cats, with mandatory reporting starting in 2030. The inclusion of additional animal species presents certain challenges, such as determining the associated animal numbers. Moreover, no quality assurance systems are currently in place for these animal species. Previously, pre-existing quality assurance systems facilitated the rapid implementation of antibiotic usage monitoring in other sectors.
In light of these considerations, the SDa expert panel recommends that the necessary preparations be initiated in a timely manner. At the request of the Ministry of Agriculture, Fisheries, Food Security and Nature, the SDa has begun outlining scenarios for implementing antibiotic usage monitoring for horses and companion animals. The SDa expert panel recommends recording prescription data in line with those collected in other sectors. As antibiotic use in the additional animal species is expected to be low, there is currently no indication that benchmarking would be required. However, the SDa expert panel would like to stress that the data collected should enable benchmarking if this is deemed necessary due to new developments, such as changes in antibiotic usage or new insights into the risk of resistance development in these animal species.

**Monitoring of antibiotic use across Europe**

Recently, EMA has published its first report (with qualitative data) on antimicrobial use in 27 EU member states, and Iceland and Norway (EMA, 2025). Previous EMA reports only included sales volume data. The recently published European Sales and Use of Antimicrobials for veterinary medicine (ESUAvet) report is EMA's annual surveillance report for 2023 and contains data for cattle (including veal calves), pigs, chickens and turkeys. Many of the reporting countries are still in the process of establishing a system for monitoring sector-specific antimicrobial use, which has resulted in incomplete use data reporting. Given the variability in the completeness of reported use data, EMA

decided not to present quantitative use data in its report, but to only provide insight in the coverage of use data reported by the countries. The Netherlands is one of the few countries that currently achieve full coverage of antibiotic use data for the animal species subject to mandatory reporting.

## Terms and definitions

| | |
|---|---|
| Benchmark threshold | For livestock farms: a value set by the SDa to which a livestock farm's antibiotic usage (in Defined Daily Doses Animal at the farm level, $DDDA_F$) is compared. Benchmark thresholds are established for each type of farm or production category within a particular livestock sector. There are two different types of benchmark thresholds: benchmark thresholds representing acceptable use, and provisional benchmark thresholds.<br>For veterinarians: the value to which the amount of antibiotics prescribed by a particular veterinarian is compared. Benchmark thresholds for veterinarians correspond to the $DDDA_F$-based benchmark thresholds for the types of farms or production categories concerned. |
| Benchmark threshold representing acceptable use | This type of benchmark threshold reflects a usage level deemed to be acceptable for the type of farm or production category concerned. The types of farms and production categories that are benchmarked by means of benchmark thresholds representing acceptable use are characterized by low or very low usage levels, limited variation in $DDDA_F$ values between individual livestock farms, and limited usage level fluctuations over time. The SDa establishes only one benchmark threshold per type of farm or production category: the action threshold. Livestock farms with $DDDA_F$ values exceeding this threshold are required to take action in order to reduce their antibiotic usage levels. |
| Cattle farming sector | In this report, the term “cattle farming sector” includes the dairy cattle farming sector (i.e. dairy cattle farms) and the non-dairy cattle farming sector (i.e. suckler cow farms, rearing farms, and beef farms). It does not include the veal farming sector (i.e. white veal farms, rosé veal starter farms, rosé veal fattening farms, and rosé veal combination farms), unless stated otherwise. |
| $DDDA_F$ | The Defined Daily Dose Animal at the farm level. The $DDDA_F$ is used to express the amount of antibiotics used at a particular livestock farm. The $DDDA_F$ is determined by first calculating the total number of treated kilograms for a particular livestock farm for a particular year (based on the antibiotics supplied to the farm concerned), and then dividing this number by the average number of kilograms of animal present on the farm concerned.<br><br>The $DDDA_F$ is expressed in DDDA/animal-year. In the initial SDa reports, the ADDD/Y unit of measurement was used. |

| | |
|---|---|
| $DDDA_{NAT}$ | The Defined Daily Dose Animal at the national level. The $DDDA_{NAT}$ is used to express the amount of antibiotics used within a particular livestock sector in the Netherlands. The $DDDA_{NAT}$ is determined by first calculating the total number of treated kilograms within a particular livestock sector for a particular year, and then dividing this number by the average number of kilograms of animal present within the livestock sector concerned.<br><br>The $DDDA_{NAT}$ is expressed in DDDA/animal-year. |
| $DDDA_{VET}$ | The Defined Daily Dose Animal at the veterinarian level. The $DDDA_{VET}$ is used to express a veterinarian's antibiotic prescription pattern for a particular production category for a particular year. To determine the $DDDA_{VET}$, the first step is to calculate, for the production category concerned, the total number of treated kilograms for which a particular veterinarian prescribed antibiotics during a specific year (the overall number of treated kilograms for all livestock farms that had a registered one-to-one relationship with this veterinarian in the year concerned). This number is then divided by the average number of kilograms of animal present based on all livestock farms that had a registered one-to-one relationship with the veterinarian concerned, including those with persistently high usage levels – which are not included when determining the veterinarian's VBI value. Due to its inclusion of livestock farms with persistently high usage levels, the $DDDA_{VET}$ is better suited for monitoring trends in veterinarians' overall prescription patterns. |
| $DDD_{VET}$ | The active-substance-based Defined Daily Dose for veterinary medicinal products. The $DDD_{VET}$ is the assumed average dose administered to a particular type of livestock in Europe, in mg/kg body weight. |
| *Diergenees-middelen-standaard* | The *Diergeneesmiddelenstandaard* (also referred to as *DG-standaard*) is an online veterinary medicinal products database managed by the SDa. It includes all antimicrobial veterinary medicinal products authorized for use in food-producing and companion animals in the Netherlands with the associated number of treated kilograms of target species*days. The *Diergeneesmiddelenstandaard* forms the basis of the SDa expert panel's analysis of the amounts of antibiotics used within food-producing livestock sectors in terms of Defined Daily Doses Animal per animal-year ($DDDA_F$ and $DDDA_{NAT}$) and its analysis of veterinarians' prescription patterns (in terms of $DDDA_{VET}$ and VBI). |
| EUROSTAT | The statistical office of the European Union. |

| | |
|---|---|
| Livestock farms with persistently high usage levels | Livestock farms whose $DDDA_F$ values have exceeded their action threshold for two years in a row. Besides being useful for sector-based usage level monitoring, identification of livestock farms with persistently high usage levels is required when determining a veterinarian's VBI value, as those farms are excluded from the SDa's VBI calculations. |
| Mass balance | A comparison between the kilograms of active substances sold according to recorded sales data and the kilograms of active substances used according to veterinarian-reported delivery data (delivery records). |
| PCU | The Population Correction Unit. The PCU is used by the European Medicines Agency as a unit of measurement for animal biomass. In general, the PCU is calculated using the number of animals slaughtered in a particular year (adjusted for imported and exported animals). However, in the case of livestock not kept for meat production (e.g. dairy cattle), the PCU is calculated using the number of live animals present within the livestock sector concerned. |
| Poultry farming sector | In this report, the term "poultry farming sector" includes all monitored poultry farms (i.e. broiler farms, turkey farms, duck farms, layer farms, pullet rearing farms, rearing farms for layer or broiler parent/grandparent stock, and production farms for layer or broiler parent/grandparent stock), unless specified otherwise. |
| Provisional benchmark threshold | This type of benchmark threshold reflects a usage level not yet consistent with acceptable use. Following their implementation, provisional benchmark thresholds are adjusted on a regular basis while the livestock farms concerned move toward more acceptable usage levels. Types of farms and production categories benchmarked by means of provisional benchmark thresholds are characterized by relatively high mean $DDDA_F$ values, wide $DDDA_F$ distributions and substantial usage level fluctuations over time. The SDa establishes only one benchmark threshold per type of farm or production category: the action threshold. Livestock farms with $DDDA_F$ values exceeding this threshold are required to take action in order to reduce their antibiotic usage levels. |
| Rabbit farming sector | In this report, the term "rabbit farming sector" refers to meat rabbit farms, and rabbit farming sector data pertain to all rabbits present on meat rabbit farms (i.e. breeding does with kits, weaned meat rabbits, and replacement breeding does). Collectively, these rabbits are referred to as "meat rabbits". |

| | |
|---|---|
| Transitional benchmark thresholds | Some of the livestock sectors have negotiated transitional benchmark thresholds with the Ministry of Agriculture, Fisheries, Food Security and Nature to help livestock farmers move toward their SDa-defined benchmark threshold in a more gradual fashion. |
| Treated kilograms | The number of kilograms of a particular type of livestock that can be treated with a single packaging unit of the antibiotic concerned. |
| VBI (as implemented in 2021) | The Veterinary Benchmark Indicator. The VBI reflects a veterinarian's antibiotic prescription pattern with respect to a particular production category in one of the livestock sectors. The VBI is calculated by first determining, for the production category concerned, the total number of treated kilograms for which the veterinarian prescribed antibiotics during a particular year (the overall number of treated kilograms for all livestock farms that had a registered one-to-one relationship with this veterinarian in the year concerned) and then dividing this number by the average number of kilograms of animal present based on all livestock farms concerned. Livestock farms with persistently high usage levels are not included in VBI calculations. |

# Antibiotic use at the national level

## Amount of antibiotics sold

In 2024, total sales of antibiotics, measured in kilograms of active substances, were 4.0% higher than the year before. The amount of antibiotics sold in 2024 represents a 75.5% reduction compared to the reference year of 2009 (see Figure 3).

## Amount of antibiotics used

Total antibiotic use in the monitored livestock sectors, measured in kilograms of active substances, declined by 1.5% in 2024. However, 2024 saw a 4.0% decline in total live weight of agricultural livestock in the monitored livestock sectors, resulting in a slight increase in weight-adjusted antibiotic use.

## Comparison of the amounts of antibiotics sold and used

Figure 3 shows each livestock sector's contribution to the total amount of active substances used across all monitored sectors. In 2024, total sales of antibiotics amounted to 121,168 kg. The antibiotics prescribed across all monitored livestock sectors amounted to 108,141 kg, accounting for over 89% of the kilograms sold. Of the kilograms of antibiotics sold, 13,027 kg (10.8%) could not be attributed to recorded antibiotic use in livestock sectors subject to SDa monitoring. This is substantially higher than the 6,744 kg discrepancy between the amounts of antibiotics sold and used in 2023. Antibiotic use in animals currently not subject to SDa monitoring, such as sheep, horses and companion animals, will have contributed to this 13,027 kg discrepancy. It should also be noted that antibiotics used in the goat farming sector were not included in the 2024 delivery record-based usage data for the monitored livestock sectors. It is possible to identify which substances included in the total volume of veterinary antibiotics sold are only authorized for use in non-food-producing animals and horses. Sales of these substances amounted to 4,090 kg (3.4% of the total sales volume) in 2024, and have fluctuated between 4,000 and 4,900 kg since 2018. Stockpiling by wholesalers or veterinary practices can also contribute to discrepancies between the amounts of antibiotics sold and used. A range of factors determine how many kilograms of antibiotics are sold during a particular year. For example, if a particular veterinary antibiotic is expected to see a price increase next year, this will often lead to stockpiling of the product concerned during the current year, and a lower sales volume in the following year.

Over the next few years, the difference between the total amounts of antibiotics used and sold, averaged over multiple years, is expected to decrease as usage monitoring is expanded to include the remaining animal species. After all, pursuant to Regulation

(EU) 2019/6, as of 2026 EU member states will be legally required to collect data on the use of antimicrobial veterinary medicinal products in goats, sheep, and horses, among other animal species. It should be noted that occasionally, larger discrepancies between the kilograms used and sold will still occur, due to year-to-year fluctuations in the amounts of veterinary medicinal products kept in stock by wholesalers and veterinary practices (i.e. products that have been purchased but not yet prescribed).
Article 113 of Regulation (EU) 2019/6 also introduces a new challenge, as it provides a legal basis for purchasing antimicrobial veterinary medicinal products not authorized in the Netherlands in other EU member states, for use under the cascade in the event of shortages of Dutch veterinary medicinal products. Data on the use of these products in the Netherlands must be recorded for reporting purposes, but sales data regarding the products concerned may not be available in the Netherlands. Vice versa, other EU member states may import Dutch veterinary medicinal products initially purchased by a party located in the Netherlands. It is expected EMA's European Antimicrobial Sales and Use (ASU) data monitoring platform will also provide insight into such cross-border flows of veterinary medicinal products.

Antibiotic usage expressed in kilograms of active substances is not an optimal indicator of the actual level of exposure to antibiotics in a particular type of livestock, as neither the animals' weight nor dosing differences between active substances are taken into account. Antibiotic usage expressed in Defined Daily Doses Animal at the national level ($DDDA_{NAT}$) is a more accurate indicator of the average level of exposure to antibiotics within a particular livestock sector (see Figure 5).

***Figure 2. Developments in sales of antibiotics over the 1999-2024 period, in kilograms of active substances (x1,000) (source: FIDIN), by main pharmacotherapeutic group***

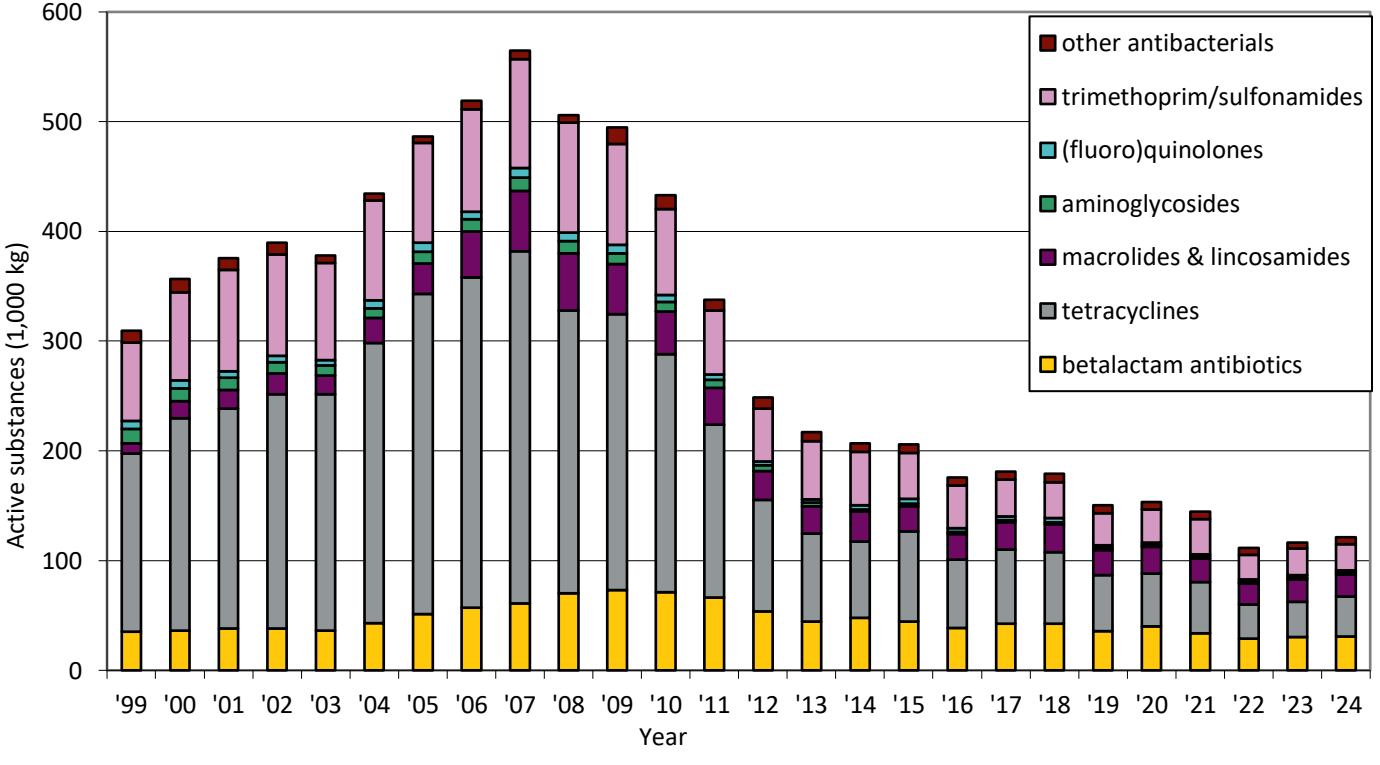
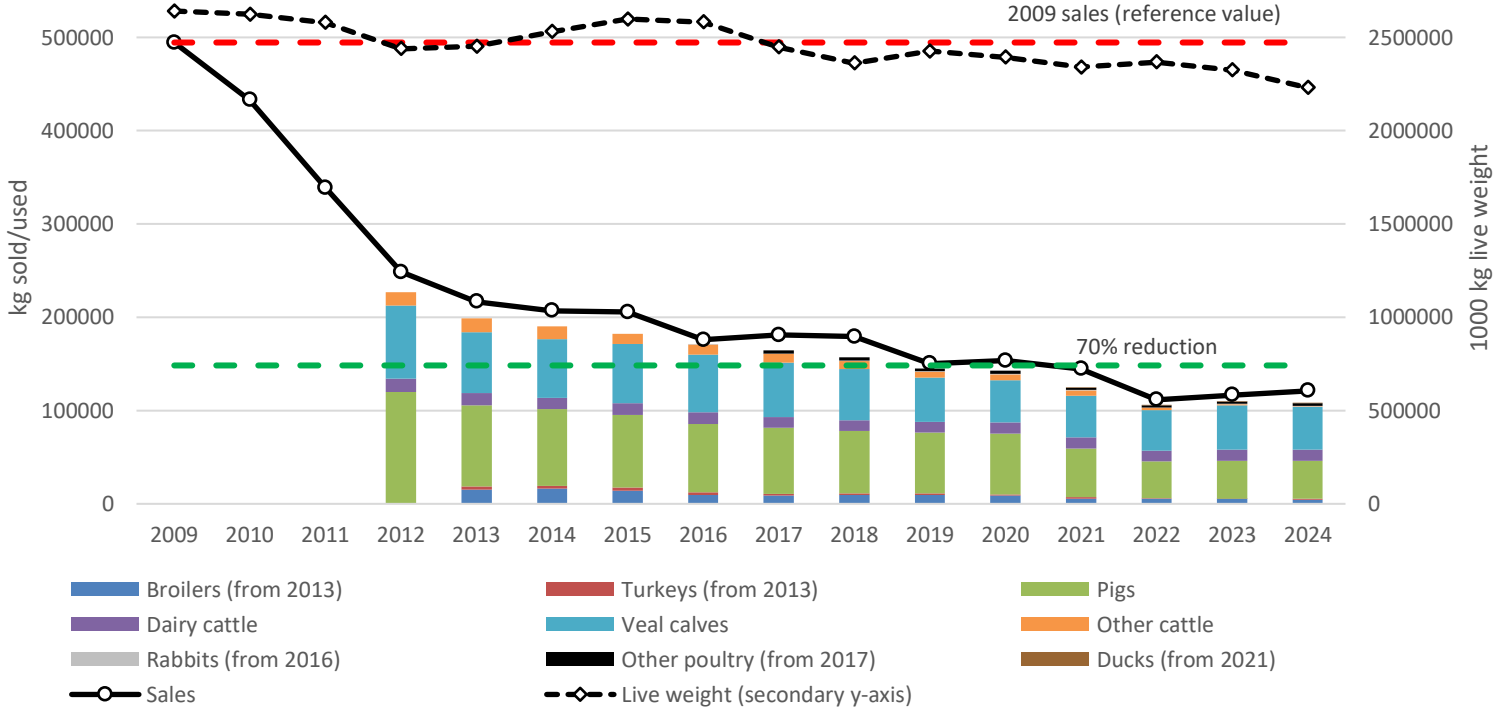


***Figure 3. Long-term developments in kilograms of active substances sold and used. The bars comprise the kilograms used in the individual monitored livestock sectors, and the black dotted line shows the total live weight of agricultural livestock* in the sectors subject to SDa monitoring in 2024 for the years concerned***

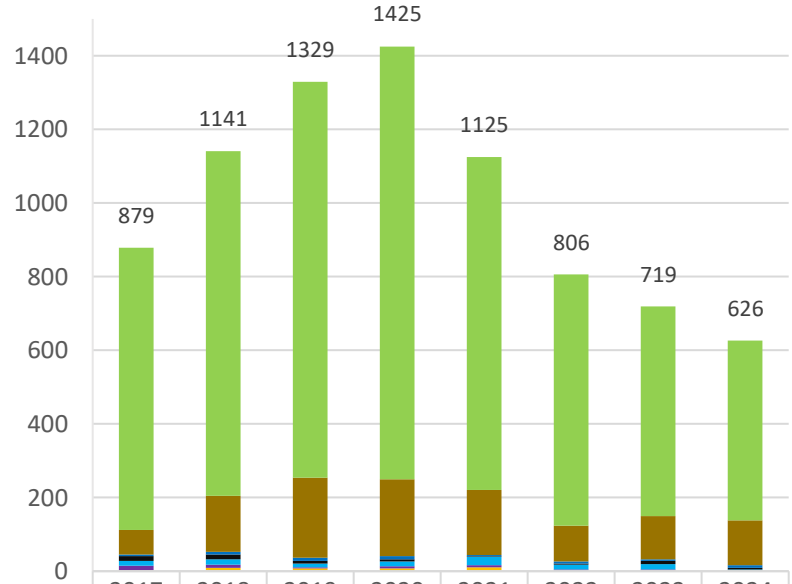



** The sum of the numbers of animals in monitored livestock sectors multiplied by their respective standardized body weights*

## Usage of critically important agents

Use of fluoroquinolones and third- and fourth-generation cephalosporins in the Dutch livestock sector is low and stable. In 2024, fluoroquinolones and third- and fourth-generation cephalosporins were used very sparingly, if at all, in the various monitored livestock sectors (with a maximum of 0.27 $DDDA_{NAT}$, recorded for the turkey farming sector). The target value for livestock farms' usage of these third-choice antibiotics is 0.
In 2024, colistin use (in kilograms of active substance) continued to decline and was 12.9% lower than the year before (see Figure 4). No or virtually no colistin was used in the broiler, turkey, dairy cattle, veal, non-dairy cattle, goat, and rabbit farming sectors.
Colistin use in pigs continued to decline for the fourth consecutive year, with a 14.5% reduction compared to the 2023 level. Recorded colistin use in pigs peaked in 2020 and has dropped by 58.6% since then. While the weaner pigs production category is the main contributor to colistin use in the pig farming sector, mean colistin use in this production category continued to decline in 2024, to 0.9 $DDDA_F$ (a 0.3 $DDDA_F$ reduction).
Colistin use in laying hens was similar to the 2023 level (Figure 4). Laying hens are the only animal species category exceeding EMA's benchmark threshold of 1 mg/PCU, with colistin use amounting to 1.9 mg/PCU (see the Terms and definitions section for a description of this unit of measurement). Although the layer farming sector has already implemented improvement measures, further action appears to be required.
In addition to fluoroquinolones, third- and fourth-generation cephalosporins, and colistin, the EMA Antimicrobial Advice Ad Hoc Expert Group's (AMEG) classification also lists "other quinolones" as Category B antibiotics, that is, antibiotics that are critically important in human medicine (EMA, 2019). Usage of flumequine (a quinolone) induces resistance mechanisms similar to those induced by enrofloxacin (a fluoroquinolone, and hence categorized as a third-choice antibiotic in the Netherlands) (Swinkels et al., 2024).
In the Netherlands, quinolones are currently categorized as second-choice antibiotics. Their categorization is based on the Dutch WVAB guideline, which was drawn up by the Veterinary Antibiotic Use Policy Working Group (WVAB) of the Royal Dutch Society for Veterinary Medicine (KNMvD). A new WVAB committee has recently been formed, and one of its objectives is to integrate the AMEG classification in the Dutch classification system, which categorizes veterinary antibiotics into first-, second- and third-choice antibiotics. As mentioned above, the Dutch classification system categorizes quinolones as second-choice antibiotics. Quinolones are used on a regular basis in the broiler and veal farming sectors (see Table A1 in Appendix 1). However, for 2024, the broiler and veal farming sectors did record a 42.9% and 25.9% decline in quinolone use, respectively. In the other livestock sectors, quinolones are used sporadically or not at all.

***Figure 4. Colistin use in kilograms of active substance from 2017 to 2024, by animal species category***




| | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|
| Pigs | 767 | 935 | 1075 | 1175 | 905 | 683 | 570 | 487 |
| Laying hens | 66 | 152 | 218 | 209 | 177 | 97 | 117 | 122 |
| Broilers | 5 | 7 | 8 | 9 | 3 | 5 | 5 | 7 |
| Other poultry* | 13 | 13 | 7 | 7 | 2 | 3 | 8 | 5 |
| Veal calves | 13 | 15 | 11 | 13 | 23 | 14 | 15 | 3 |
| Dairy cattle | 12 | 8 | 4 | 5 | 5 | 4 | 3 | 2 |
| Non-dairy cattle | 2 | 8 | 4 | 8 | 11 | 1 | 0 | 0 |
| Rabbits | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 |
| Turkeys | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Ducks | | | | | 0 | 0 | 0 | 0 |
| Total | 879 | 1141 | 1329 | 1425 | 1125 | 806 | 719 | 626 |

* In this figure, the “Other poultry” category includes layer pullets, layer parent/grandparent stock, and broiler parent/grandparent stock.

# Antibiotic use by livestock sector

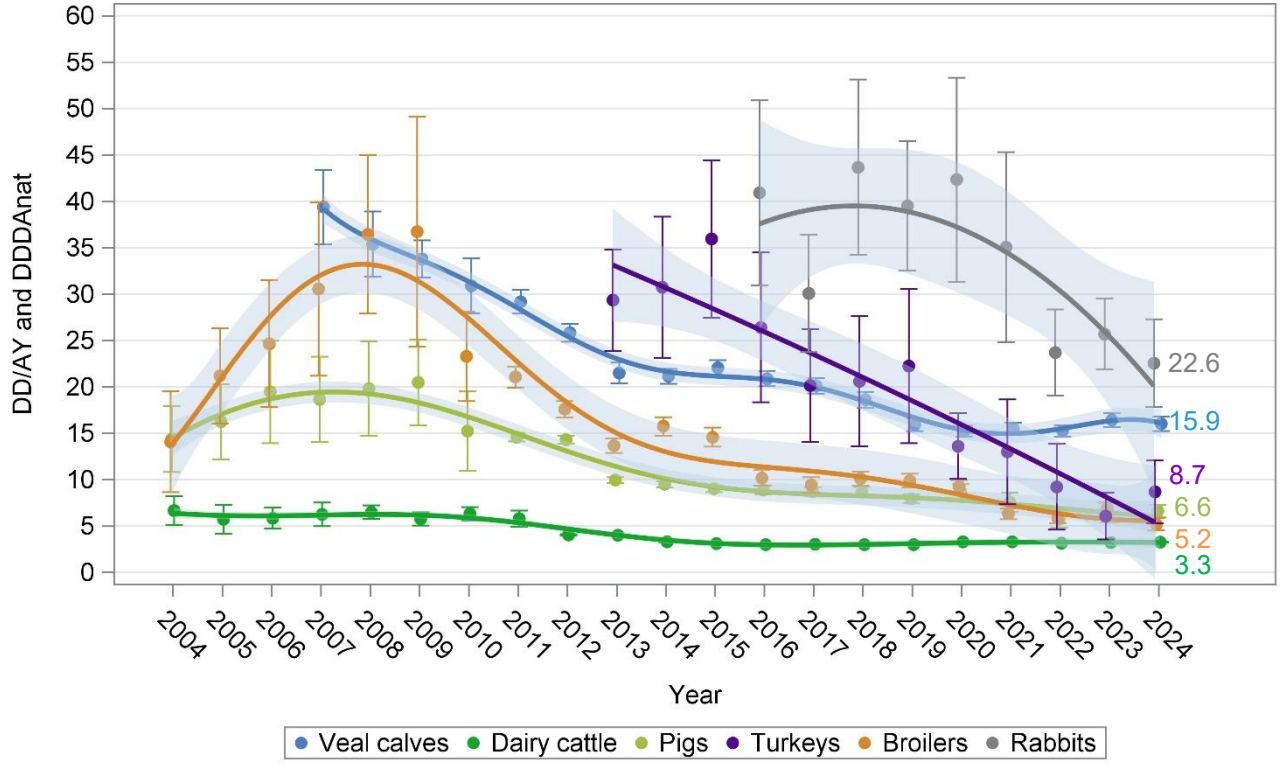
This chapter describes and illustrates the trends observed in individual livestock sectors' overall antibiotic use. The information is presented in sector-specific sections. The main food-producing livestock sectors (sectors comprising at least 250 livestock farms each) are discussed first, followed by the smaller food-producing livestock sectors. Figure 5 shows the long-term $DDDA_{NAT}$ developments for the various livestock sectors. A sector's $DDDA_{NAT}$ value reflects the average number of days per animal-year an animal in the livestock sector concerned was treated with antibiotics.
In addition to livestock sectors' $DDDA_{NAT}$-based antibiotic usage data, the sections below also includes information on antibiotic usage trends and benchmarking results for the various types of farms or production categories within these sectors. When presenting farm-level antibiotic usage data, $DDDA_F$ values are used. Livestock farms are benchmarked by means of one of the following types of SDa-defined benchmark thresholds:

1. Benchmark thresholds representing acceptable use, which do not have to be adjusted for several years following their implementation
2. Provisional benchmark thresholds, which have to be adjusted on a regular basis

Some of the livestock sectors (the turkey, rabbit, and broiler farming sectors) have negotiated transitional benchmark thresholds with the Ministry of Agriculture, Fisheries, Food Security and Nature to help livestock farmers move toward their SDa-defined benchmark threshold in a more gradual fashion. These transitional benchmark thresholds are used during a predefined period, after which they will be replaced by the SDa-defined benchmark threshold. The sector-negotiated transitional benchmark thresholds and their respective periods of validity can be found in Tables A53 to A56 in Appendix 1.

Following years of declining antibiotic usage levels in the various livestock sectors, livestock farms at the tail end of their sector's $DDDA_F$ distribution are now a key focus area, as their usage levels have exceeded the applicable benchmark threshold. While above-threshold antibiotic usage levels may occur occasionally, persistently high usage levels (i.e. $DDDA_F$ values that have exceeded the SDa-defined action threshold for at least two years in a row) are undesirable.

***Figure 5. Long-term developments in antibiotic use according to historic data (in DD/AY*, for 2004 to 2010) and SDa data (in $DDDA_{NAT}$, for 2011 to 2024), presented as so-called spline curves with point estimates and 95% confidence intervals for each year. The $DDDA_{NAT}$ values for 2024 are shown to the right of the spline curves. Underlying data are available in Appendix 1***



# Main food-producing livestock sectors

## Veal farming sector

In 2024, antibiotic use in the veal farming sector amounted to 15.9 $DDDA_{NAT}$, similar to the year before. There has been no clear downward trend in recent years. The sector's lowest $DDDA_{NAT}$ value was recorded for 2020 (see Figure 5).

**Developments in the veal farming sector**

The implementation of a new calculation method has been postponed until late 2025. It is intended to provide group-based information on the amounts of antibiotics used in veal calves, among other insights. The SDa expert panel hopes this will help raise veal farmers' awareness and will eventually result in a downward trend in their antibiotic use. The substantial between-farm differences in antibiotic usage levels in this livestock sector suggest there is room for improvement in this respect.

A new calculation method alone will probably not be sufficient to realize substantial usage level reductions in the veal farming sector. Certain aspects of the veal production chain likely need to be addressed as well. Several pilot studies have been performed to identify potential production chain modifications that could support usage level reductions in the veal farming sector. Results of the pilot studies are expected to be published in the near future.

On January 1, 2023, the minimum age at which German calves are allowed to be transported was increased from 14 to 28 days, which has resulted in higher body weights at the start of the production cycle. However, this is not accounted for in the current calculation method. How the new age restrictions for importing German calves affect Dutch veal farmers' antibiotic usage levels is currently unknown and has not been studied. Each year, approximately 1.5 million calves are slaughtered in the Netherlands, and in 2024, over half a million calves were imported from Germany (Statistics Netherlands (CBS), 2025; Netherlands Enterprise Agency (RVO), 2025).

**Antibiotic use by type of farm**

In 2024, none of the four types of veal farms (white veal farms, rosé veal starter farms, rosé veal fattening farms, and rosé veal combination farms) realized a distinct reduction in the amount of antibiotics used. Antibiotic use at white veal farms has been relatively stable since 2018, with mean usage levels of approximately 20 $DDDA_F$ (see Figure 8a). White veal farms still show substantial between-farm differences in antibiotic usage levels (Figure 6), and individual farms show considerable year-to-year usage level

fluctuations (Figure A4 in Appendix 1). Realizing stable antibiotic usage levels tends to be a struggle for white veal farmers.
Mean antibiotic use at rosé veal starter farms had been hovering around the 70 $DDDA_F$ level since 2019, but 2024 saw a slight increase in their mean usage level and more pronounced differences in usage levels between individual farms (Figures 7 and 8b). Hardly any rosé veal starter farms recorded low usage levels for 2024.
Antibiotic use at rosé veal fattening farms is relatively low, with mean usage levels of approximately 4 $DDDA_F$ since 2019, the year in which new benchmark thresholds were implemented for these farms. Despite their relatively low mean $DDDA_F$ value, rosé veal fattening farms are characterized by a relatively wide range of usage levels (Figure 8c).
The rosé veal combination farms reporting category has decreased in size over the years, as most farms originally included in this category have since been included in either the rosé veal starter farms reporting category or the rosé veal fattening farms reporting category. For the remaining rosé veal combination farms, mean antibiotic use in 2024 amounted to 17.6 $DDDA_F$. Similar to the other types of veal farms, rosé veal combination farms show substantial between-farm differences in antibiotic usage levels.

***Figure 6. 2024 $DDDA_F$ distribution for white veal farms (N = 707). The red line represents the SDa-defined provisional benchmark threshold***

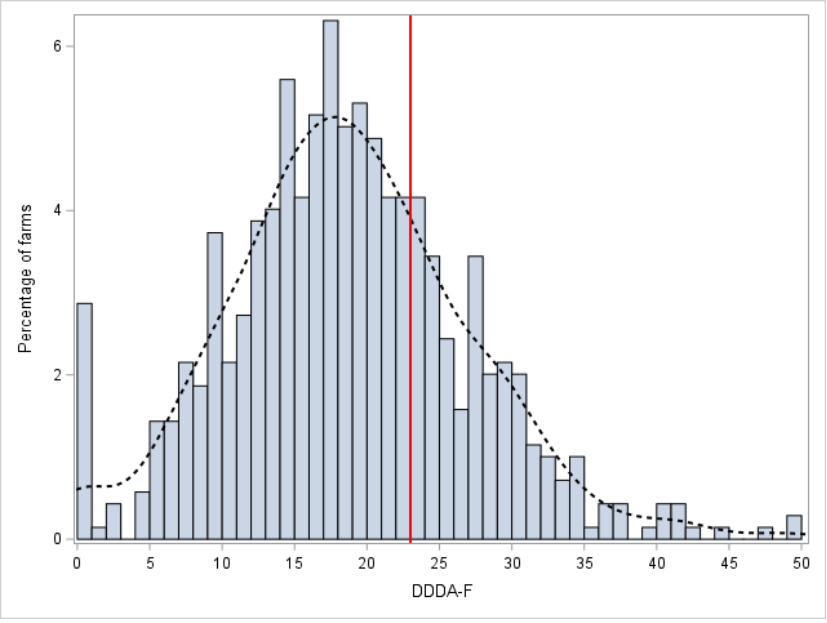
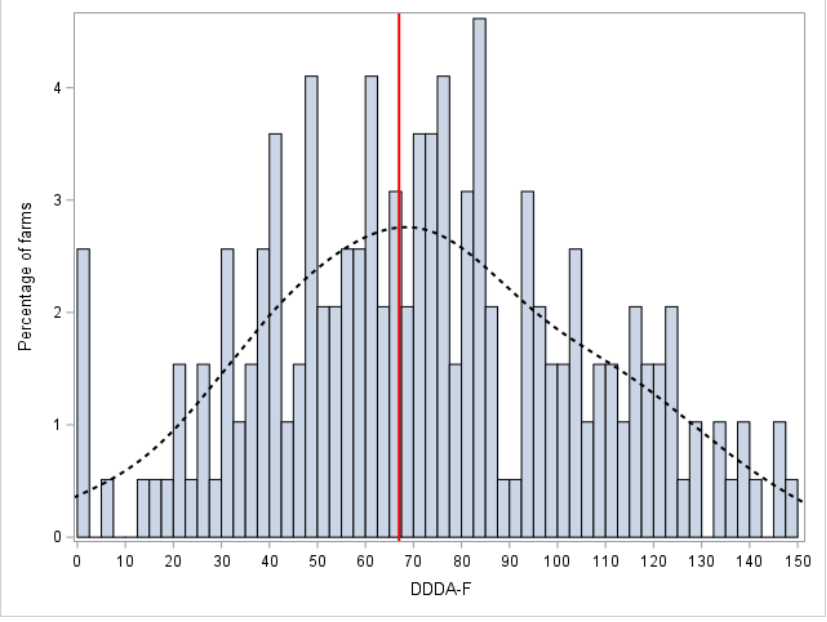
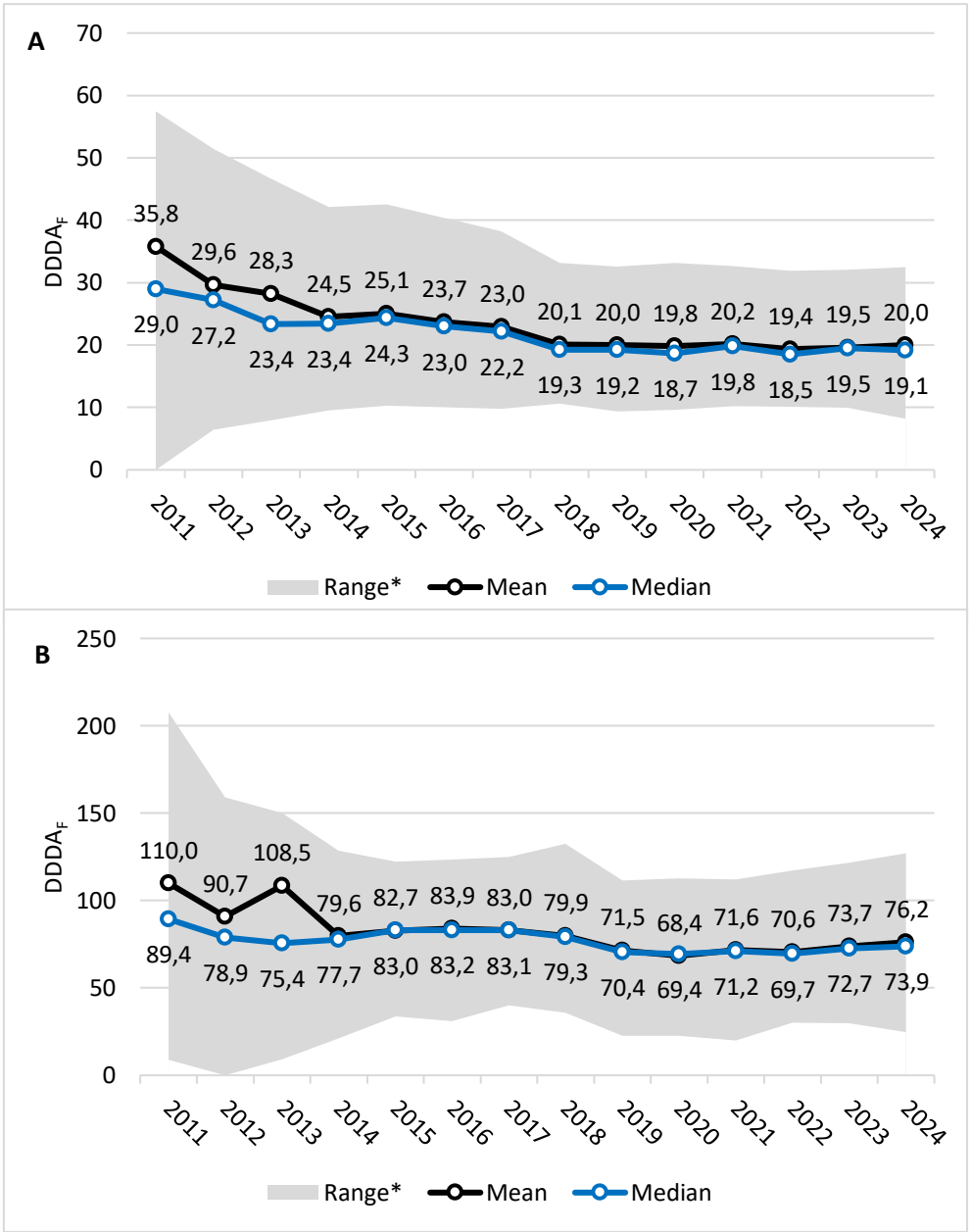
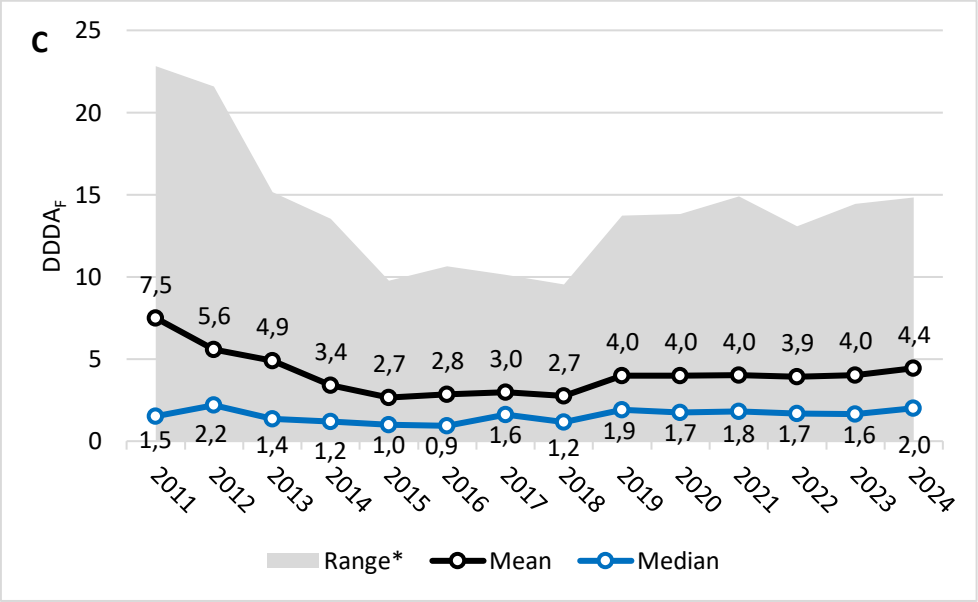



***Figure 7. 2024 $DDDA_F$ distribution for rosé veal starter farms (N = 202). The red line represents the SDa-defined provisional benchmark threshold***



***Figures 8a to 8c. Long-term $DDDA_F$ trends for (a) white veal farms, (b) rosé veal starter farms, and (c) rosé veal fattening farms. The graphs show the mean and median $DDDA_F$ values and $DDDA_F$ ranges for the years concerned***






**Benchmarking**

In 2024, all four types of veal farms saw a small increase in both the proportion of farms included in the action zone and the proportion of farms with persistently high usage levels.

White veal farms are benchmarked by means of a provisional benchmark threshold of 23 DDDA$_F$. As the proportion of white veal farms with persistently high usage levels is relatively small (see Table 1), reduction efforts for white veal farms should be aimed at across-the-board usage level reductions.

The majority of rosé veal starter farms recorded action zone usage levels for 2024, indicating that on an average rosé veal starter farm, antibiotic veterinary medicinal products are used for more than 67 days per year. Many of these farms had also recorded action zone usage levels for 2023 and have therefore been categorized as farms with persistently high usage levels (Table 1).

Rosé veal fattening farms are benchmarked by means of a 4 DDDA$_F$ benchmark threshold representing acceptable use. Although most rosé veal fattening farms did not exceed this benchmark threshold in 2024, the number of farms with high or persistently high usage levels is still relatively large.

The veal farming sector's coaching program for farmers with persistently high usage levels, which was introduced in 2023, has not resulted in a clear decline in the number of farms with persistently high usage levels. In fact, white veal farms, rosé veal starter farms and rosé veal fattening farms even saw a rise in the proportion of farms with persistently high usage levels in the past two years.

The coaching program uses a step-by-step approach to reduce antibiotic usage levels at a selection of farms with persistently high usage levels. As a first step, an advisory team is assembled, comprising the veal farmer, the farmer's veterinarian, and the farmer's feed consultant/a representative of the legal owner of the calves. Among other things, this advisory team prepares an action plan aimed at reducing the amount of antibiotics used at the farm concerned. If after 1.5 years the desired usage level reduction has not been achieved, an external process supervisor is added to the advisory team (Stichting Brancheorganisatie Kalversector (SBK), 2024).

***Table 1. 2023 and 2024 benchmarking results for veal farms according to the SDa-defined action threshold, by type of farm***

| Number of farms | Type of farm | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | White veal farms | | Rosé veal starter farms | | Rosé veal fattening farms | | Rosé veal combination farms | |
| | 2023 | 2024 | 2023 | 2024 | 2023 | 2024 | 2023 | 2024 |
| In target zone | 542 (73%) | 491 (69%) | 82 (41%) | 82 (41%) | 333 (65%) | 299 (64%) | 22 (34%) | 21 (33%) |
| In action zone | 205 (27%) | 216 (31%) | 119 (59%) | 120 (59%) | 176 (35%) | 165 (36%) | 42 (66%) | 43 (67%) |
| With persistently high usage levels | 78 (10%) | 75 (11%) | 74 (37%) | 86 (43%) | 129 (25%) | 128 (28%) | 11 (17%) | 12 (19%) |

## Broiler farming sector

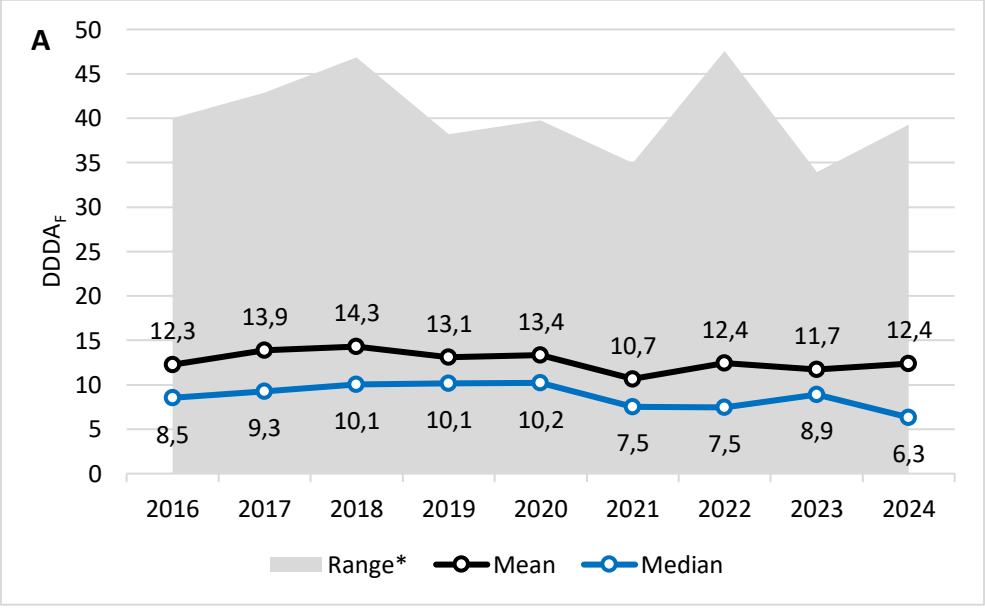
Antibiotic use in the broiler farming sector declined by 24.8%, from 6.9 $DDDA_{NAT}$ in 2023 to 5.2 $DDDA_{NAT}$ in 2024. This has offset the increase recorded for 2023 and has resulted in the lowest $DDDA_{NAT}$ value in the broiler farming sector's monitoring history. The shift from conventional toward slower growing breeds has been a key contributor to the sector's lower overall antibiotic use.
In 2024, second-choice antibiotics accounted for 65% of the sector's antibiotic use in terms of $DDDA_{NAT}$. While lower than the 72% recorded for 2023, this is still considered to be relatively high. The relative contribution of second-choice antibiotics to the sector's antibiotic use in terms of $DDDA_F$ is lower, at 40.3%. This discrepancy is due to second-choice antibiotics being associated with a relatively high body weight at the time of treatment. While the denominator in $DDDA_F$ calculations is based on broilers' body weight at the time of treatment, the denominator in $DDDA_{NAT}$ calculations is based on a standardized body weight, which is lower. However, the $DDDA_{NAT}$-based contribution of 65% and the $DDDA_F$-based contribution of 40.3% to the sector's antibiotic use are both considered relatively high.

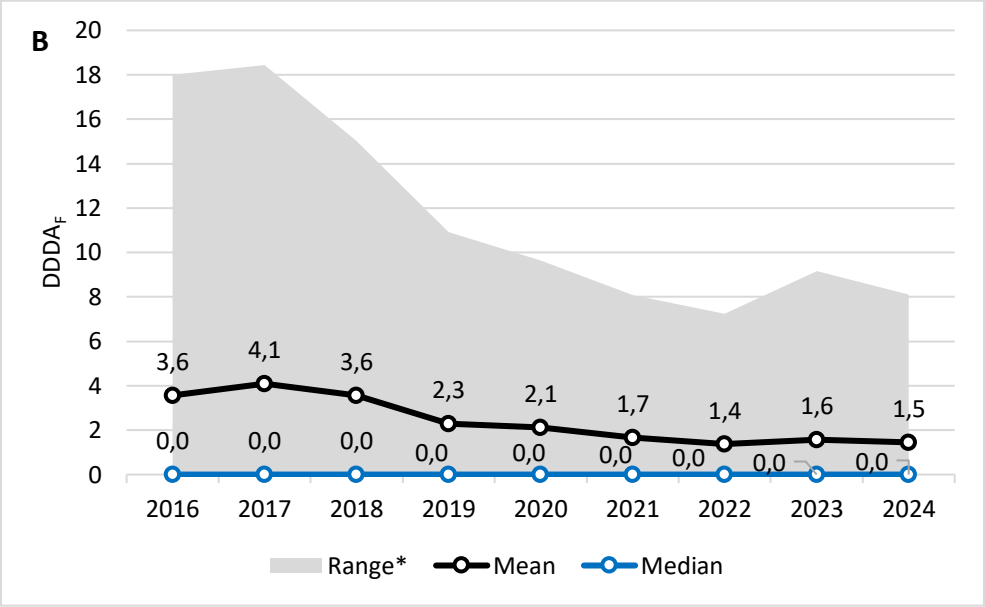
**Antibiotic use by type of farm**

In the broiler farming sector, a distinction is made between two categories of broilers: conventional breeds and slower growing breeds. Conventional breeds are mainly intended for the foodservice industry (e.g. restaurants, catering operations, and institutions) and for export. Slower growing breeds, on the other hand, are primarily intended for supermarkets in the Netherlands. The proportion of slower growing broiler breeds continues to rise. In 2024, slower growing breeds accounted for 55% of the average number of broilers present at broiler farms.
Following a rise in 2023, median antibiotic use at farms with conventional breeds dropped to an all-time low of 6.3 $DDDA_F$ in 2024. This represents a 15.4% reduction from the previous lowest median $DDDA_F$ value for farms with conventional breeds, recorded for 2022. Mean $DDDA_F$ values recorded for broiler farms with conventional breeds exceed those recorded for farms with slower growing breeds (Figures 9a and 9b). In 2024, mean antibiotic use at broiler farms with conventional breeds increased slightly, from 11.7 to 12.4 $DDDA_F$. It should be noted that one broiler farm with an extremely high antibiotic usage level has had a considerable impact on the mean $DDDA_F$ value for 2024. Had this farm been excluded from the data set, mean antibiotic use would have amounted to 11.1 $DDDA_F$, which would have represented a small reduction from the 2023 level. Unlike mean $DDDA_F$ values, median $DDDA_F$ values are hardly affected by outliers like this and are therefore better suited to provide insight into antibiotic usage trends. Although the current long-term data do not show a distinct trend in antibiotic use at broiler farms with

conventional breeds (Figure 9a), the SDa expert panel expects the recent decline in median antibiotic use can be continued and marks the beginning of a downward trend. There is still considerable between-farm variation in $DDDA_F$ values, which suggests additional usage level reductions should be feasible (Figure 10).
$DDDA_F$ values for broiler farms with slower growing breeds have stabilized at a low level (Figure 9b), and the majority of these farms (72%) did not record any antibiotic use for 2024. The shift from conventional toward slower growing breeds over the past few years has contributed considerably to the decline in antibiotic use observed for the broiler farming sector as a whole.
In 2024, mean antibiotic use at broiler parent/grandparent stock rearing farms was low (5.4 $DDDA_F$), but with relatively large differences in usage levels between individual rearing farms (Figure A17 in Appendix 1). Antibiotic use at parent/grandparent stock production farms was low, with limited between-farm differences in usage levels (Figure A18 in Appendix 1). Please be aware that antibiotic use at these rearing and production farms does not contribute to the broiler farming sector's $DDDA_{NAT}$ value.

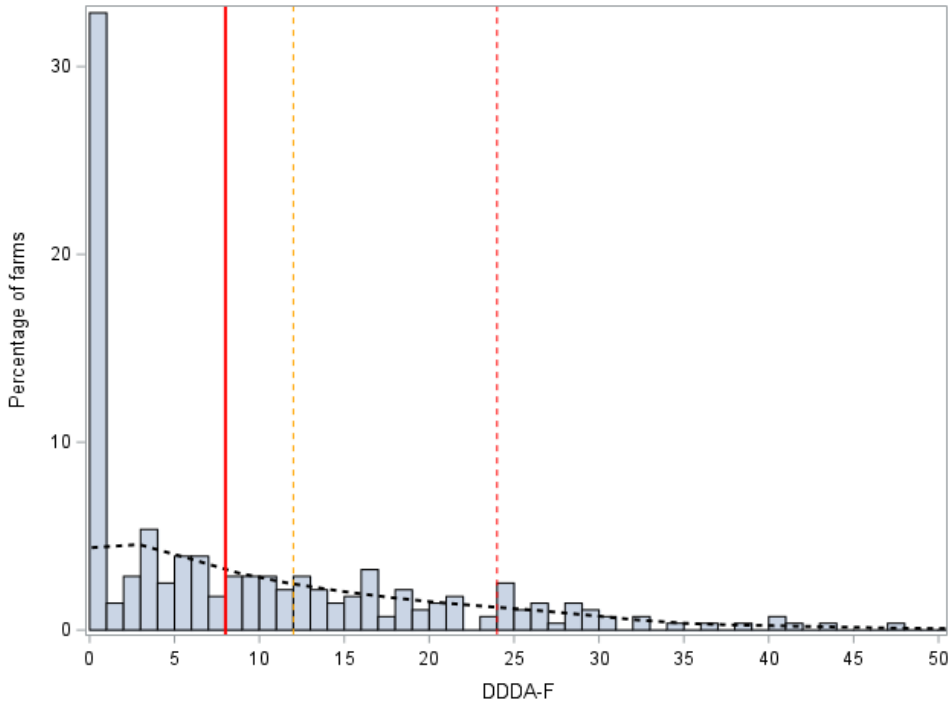
***Figures 9a and 9b. Long-term $DDDA_F$ trends for (a) broiler farms with conventional breeds, and (b) broiler farms with slower growing breeds. The graphs show the mean and median $DDDA_F$ values and $DDDA_F$ ranges for the years concerned***






* The gray area represents the middle 90% of farms, with its lower limit corresponding to the 5$^{th}$ percentile and its upper limit corresponding to the 95$^{th}$ percentile.

***Figure 10. 2024 $DDDA_F$ distribution for broiler farms with conventional breeds (N = 280). The red solid line represents the SDa-defined action threshold. The orange and red dotted lines represent the transitional benchmark thresholds negotiated by the livestock sector.***




**Benchmarking**

In 2019, the broiler farming sector's benchmark threshold representing acceptable use was set at 8 $DDDA_F$, irrespective of the type of breed. As agreed with the Ministry of Agriculture, Fisheries, Food Security and Nature, this benchmark threshold is phased in over several years, with separate implementation processes for the two types of broiler farms (i.e. those with conventional breeds and those with slower growing breeds). Details on the phased implementation of this benchmark threshold are available in Appendix 1 (Tables A55 and A56). In 2024, broiler farms continued to be benchmarked by means of their sector-negotiated signaling and action thresholds, which were 12 and 24 $DDDA_F$, respectively, for broiler farms with conventional breeds, and 8 and 12 $DDDA_F$, respectively, for broiler farms with slower growing breeds.

For broiler farms with conventional breeds, the proportion of farms with target zone usage levels has increased from 47% in 2023 to 55% in 2024. Many of the farms included in the action zone in 2024 had also recorded action zone usage levels for 2023 and are

considered to have persistently high usage levels when benchmarked using the SDa-defined action threshold (Table 2). On the other hand, 142 broiler farms with conventional breeds managed to stay below the 8 $DDDA_F$ benchmark threshold representing acceptable use in both 2023 and 2024.

For broiler farms with conventional breeds, the SDa-defined action threshold of 8 $DDDA_F$ is deemed to be a goal to work toward, and the broiler farming sector is currently still using higher benchmark thresholds. When benchmarked using the higher sector-negotiated signaling and action thresholds of 12 and 24 $DDDA_F$, respectively, 15% of broiler farms with conventional breeds recorded action zone usage levels for 2024, and 19% recorded signaling zone usage levels (Table 2). From the 2025 reporting year, lower sector-negotiated benchmark thresholds apply. The new signaling and action thresholds for broiler farms with conventional breeds are 10 and 20 $DDDA_F$, respectively.

The $DDDA_F$ distribution for broiler farms with conventional breeds is wider than the distribution for broiler farms with slower growing breeds, due to a long tail consisting of farms with $DDDA_F$ values several times the benchmark threshold representing acceptable use (Figure 10). This has been observed consistently since 2016 (see Figure 9a). However, in 2024, broiler farms with conventional breeds' median $DDDA_F$ value did not exceed the benchmark threshold representing acceptable use, meaning most farms managed to achieve acceptable usage levels.

Regarding broiler farms with slower growing breeds, only 5% of farms exceeded the SDa-defined action threshold in 2024, and hardly any farms had persistently high usage levels (Table 2). Evidently, the introduction of slower growing breeds has had a substantial positive effect on the usage of antibiotics in the broiler farming sector.

Reduction efforts in the broiler farming sector should therefore be targeted at broiler farms with conventional breeds with high or persistently high usage levels. The SDa expert panel feels considerable improvements should be feasible, given the substantial differences in usage levels between individual broiler farms with conventional breeds and the large number of farms that have already managed to achieve acceptable usage levels for several consecutive years.

*Table 2. 2023 and 2024 benchmarking results for broiler farms according to both the SDa-defined action threshold and sector-negotiated transitional benchmark thresholds, by type of farm*

| Type of benchmark threshold(s) | Number of farms | Type of farm | | | |
|---|---|---|---|---|---|
| | | Broiler farms with conventional breeds | | Broiler farms with slower growing breeds | |
| | | 2023 | 2024 | 2023 | 2024 |
| SDa-defined | In target zone | 143 (47%) | 153 (55%) | 561 (94%) | 562 (95%) |
| | In action zone | 163 (53%) | 127 (45%) | 34 (6%) | 31 (5%) |
| | With persistently high usage levels | 107 (35%) | 88 (31%) | 3 (1%) | 5 (1%) |
| Sector-negotiated (transitional) | In target zone | 187 (61%) | 183 (65%) | 561 (94%) | 562 (95%) |
| | In signaling zone | 80 (26%) | 54 (19%) | 20 (3%) | 17 (3%) |
| | In action zone | 39 (13%) | 43 (15%) | 14 (2%) | 14 (2%) |
| | With persistently high usage levels | 15 (5%) | 5 (2%) | 0 (0%) | 3 (1%) |

## Pig farming sector

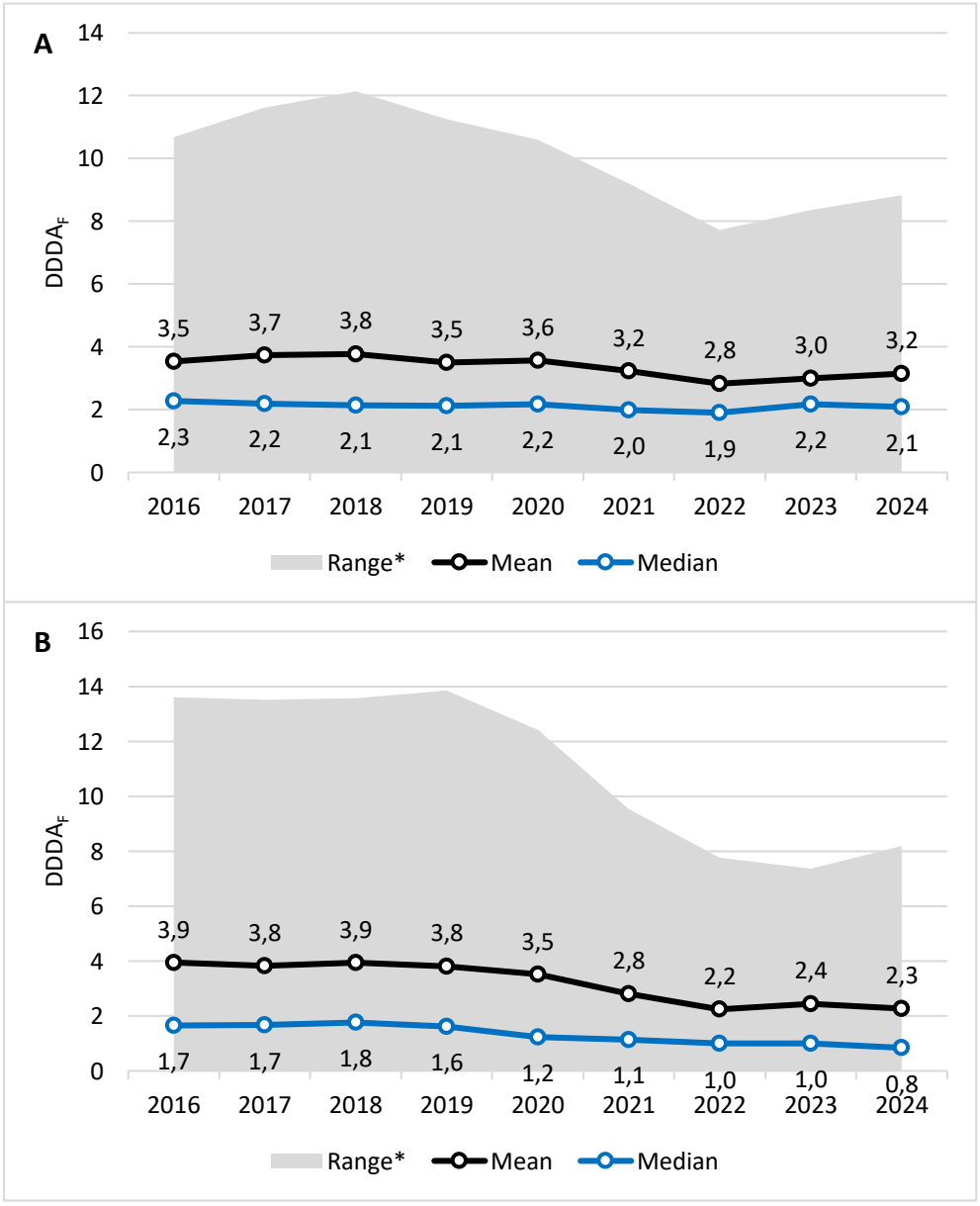
In 2024, antibiotic use in the pig farming sector amounted to 6.6 $DDDA_{NAT}$. This represents an 11.8% (0.7 $DDDA_{NAT}$) increase compared to the $DDDA_{NAT}$ value recorded for 2023, and a 68% reduction compared to the value recorded for the reference year 2009. As a result, the reduction from the 2009 level became less pronounced in 2024.

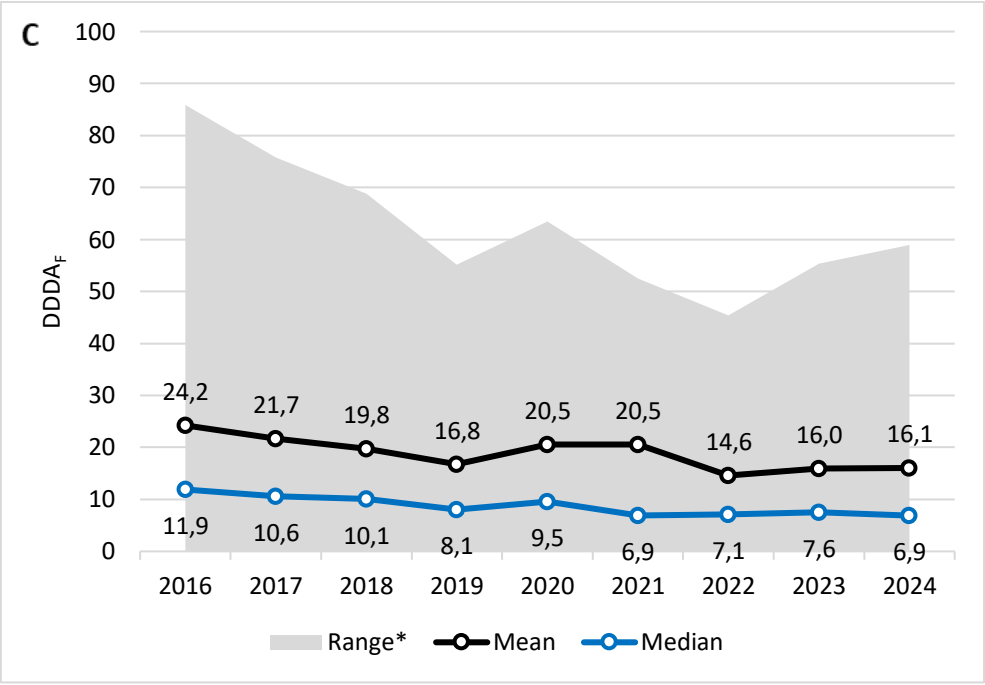
**Antibiotic use by production category**

The $DDDA_{NAT}$ increase recorded for 2024 is not reflected in $DDDA_F$-based usage data for the individual production categories (i.e. sows/suckling piglets, weaner pigs, and fattening pigs) (Figures 11a to 11c). Farms with sows and suckling piglets are characterized by low mean $DDDA_F$ values, although the $DDDA_F$ range has widened slightly. Antibiotic usage levels at farms with fattening pigs even saw a small decline in 2024, with their median use now being below 1 $DDDA_F$.

Antibiotic use at farms with weaner pigs has declined substantially since 2016. Their 2024 data present a mixed picture, with a decrease in median $DDDA_F$ being accompanied by an increase in mean $DDDA_F$ and a wider $DDDA_F$ range (Figure 11c). The number of farms with high or extremely high usage levels, which exert considerable influence on the mean $DDDA_F$ value for farms with weaner pigs, remains relatively high. In 2024, 78 farms with weaner pigs had usage levels in excess of 50 $DDDA_F$. If they were to be excluded from the data set, this would lower the production category's mean $DDDA_F$ value to 9.1.

***Figures 11a to 11c. Long-term $DDDA_F$ trends for (a) farms with sows and suckling piglets, (b) farms with fattening pigs, and (c) farms with weaner pigs. The graph shows the mean and median $DDDA_F$ values and $DDDA_F$ ranges for the years concerned***






* The gray area represents the middle 90% of farms, with its lower limit corresponding to the 5$^{th}$ percentile and its upper limit corresponding to the 95$^{th}$ percentile.

**Benchmarking**

Both the sows and suckling piglets production category and the fattening pigs production category are benchmarked by means of a 5 DDDA$_F$ benchmark threshold representing acceptable use. In 2024, the proportion of farms with sows and suckling piglets recording action zone usage levels was 14%, slightly higher than in 2023. At 11%, the proportion of farms with fattening pigs included in the action zone was identical to the proportion recorded for 2023. The proportion of farms with sows and suckling piglets with persistently high usage levels declined in 2024, while there was no change in the proportion of farms with fattening pigs with persistently high usage levels (Table 3).

***Table 3. 2023 and 2024 benchmarking results for farms with sows and suckling piglets and farms with fattening pigs, according to the SDa-defined action threshold***

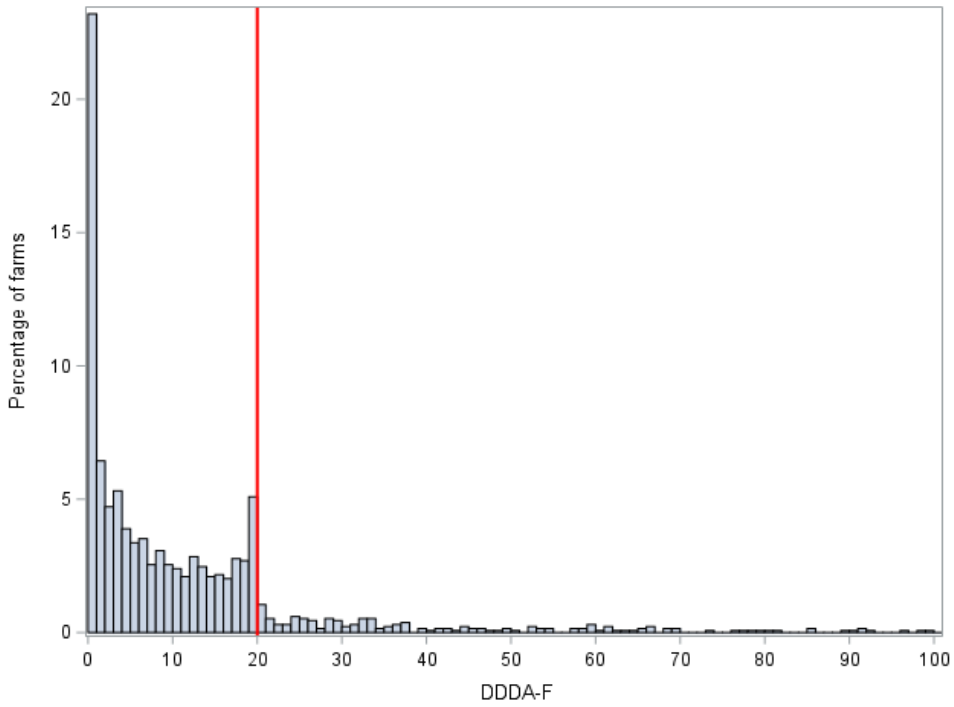
| Number of farms | Production category | | | |
|---|---|---|---|---|
| | Sows/suckling piglets | | Fattening pigs | |
| | 2023 | 2024 | 2023 | 2024 |
| **In target zone** | 1,102 (88%) | 1,034 (86%) | 2,523 (89%) | 2,401 (89%) |
| **In action zone** | 148 (12%) | 164 (14%) | 297 (11%) | 296 (11%) |
| **With persistently high usage levels** | 68 (5%) | 57 (4%) | 81 (3%) | 78 (3%) |

The weaner pigs production category is currently still benchmarked by means of a 20 $DDDA_F$ provisional benchmark threshold. At 15%, the proportion of farms with weaner pigs recording action zone usage levels remained unchanged in 2024 (Table 4). The proportion of farms with persistently high usage levels declined to 7%. A relatively large percentage of farms recorded usage levels just below their 20 $DDDA_F$ benchmark threshold, which was also noted in last year's report (Figure 12). As of 2026, the weaner pigs production category will be benchmarked by means of a 15 $DDDA_F$ provisional benchmark threshold. This provisional benchmark threshold is intended to remain valid for a 3-year period, after which the SDa expert panel will reevaluate whether a benchmark threshold representing acceptable use can be established for this production category. The SDa expert panel may deviate from this 3-year period in the event of any relevant developments regarding this production category. A benchmark threshold representing acceptable use can only be established once $DDDA_F$ differences between individual farms with weaner pigs have become less pronounced. $DDDA_F$ reductions at the farms occasionally or persistently recording usage levels well above the current 20 $DDDA_F$ benchmark threshold are key in order to meet this prerequisite.

*Table 4. 2023 and 2024 benchmarking results for farms with weaner pigs, according to the SDa-defined action threshold*

| Number of farms | Weaner pigs production category | |
|---|---|---|
| | 2023 | 2024 |
| In target zone | 1,184 (85%) | 1,139 (85%) |
| In action zone | 208 (15%) | 197 (15%) |
| With persistently high usage levels | 105 (8%) | 89 (7%) |

*Figure 12. 2024 $DDDA_F$ distribution for farms with weaner pigs (N = 1,336). The red line represents the SDa-defined action threshold*



## Goat farming sector

Data on the amounts of antibiotics used in the goat farming sector could not be included in this year's report due to issues regarding the completeness and quality of sector-provided data. While insufficient quantity and quality of goat farming sector data was already mentioned in previous SDa reports, at the time there were no indications that issues with recorded farm-level antibiotic usage data would systematically skew the amounts of antibiotics used in the goat farming sector. Recently, new issues were identified, regarding the recording of prescription data. It became apparent that substitute veterinarians sometimes do not enter prescribed antibiotics in the designated database. This leads to systematic underreporting of the amounts of antibiotics used at certain farms, resulting in an underestimation of $DDDA_F$ values. The extent of this underestimation is not yet known. These data quality issues pose a threat to the reliability of the outcomes of the monitoring process. This constitutes a real risk, particularly in the context of mandatory reporting to the EU (ESUAvet), with potentially substantial consequences for both the livestock sector in question and the monitoring and reporting body.

With regard to non-dairy goat animal categories (i.e. fattening lambs, rearing goats, and goats kept as a hobby), other problems have been identified in addition to the issue described above. Sector-provided antibiotic usage data for farms with these animal categories appear to be incomplete, particularly with respect to farms with up to 50 animals (see Table 5). Hobby farms with non-dairy goats are expected to be the main driver in this regard. However, the discrepancies between data from Statistics Netherlands (CBS) and sector-provided data on the numbers of farms are not as pronounced as they were last year. As an additional complication, no data on the numbers of animals were provided for 40 of the 112 non-dairy goat farms, which means no $DDDA_F$ values could be calculated for these farms. Furthermore, for a number of farms either no animal category, or an incorrect animal category (a category other than the predefined animal categories of dairy goats, rearing goats, fattening lambs, and goats kept as a hobby) was provided.

The SDa expert panel urges the goat farming sector, veterinarians and the authorities to quickly assess the scale of these problems and to resolve the data recording issues. The issues call for an audit of the quality and completeness of the sector's antibiotic usage data and the recording of these data in databases in order to swiftly identify areas for improvement in the data recording process. Improvements are needed considering that, pursuant to EU legislation, comprehensive monitoring of antibiotic usage in the goat farming sector will become mandatory in 2026.

***Table 5. Comparison of the number of goat farms according to CBS data and the number of goat farms for which antibiotic usage data have been provided, categorized by farm size (CBS, 2025). In this table, the "All goat farms" category includes both dairy goat farms and other (i.e. non-dairy) goat farms***

| | | Number of farms | |
|---|---|---|---|
| **Category** | **Farm size** | **CBS data** | **Sector-provided data** |
| **All goat farms** | **Number of animals unknown** | | 51 |
| | **20-50 animals*** | 85 | 11 |
| | **50-100 animals** | 28 | 15 |
| | **100-200 animals** | 24 | 13 |
| | **200-500 animals** | 45 | 44 |
| | **500 animals or more** | 340 | 335 |
| | **Total number of farms** | 522 | 469 |

* Anyone keeping 25 goats or more is legally required to report the use of antibiotics in their animals.

## Cattle farming sector

In 2024, antibiotic use in the dairy cattle farming sector remained stable at a low level of approximately 3 $DDDA_{NAT}$. In the non-dairy cattle farming sector (i.e., suckler cow farms, rearing farms, and beef farms), antibiotic use amounted to just 0.25 $DDDA_{NAT}$.

**Antibiotic use by type of farm**

Mean antibiotic use at dairy cattle farms has been approximately 2 $DDDA_F$ ever since 2014. In addition to their consistently low mean $DDDA_F$ values, dairy cattle farms are also characterized by relatively minor between-farm differences in usage levels and limited year-to-year usage level fluctuations at individual farms.

Most suckler cow farms, rearing farms, and beef farms did not record any antibiotic use for 2024, and mean antibiotic use for these types of farms remained below 1 $DDDA_F$. Both rearing farms and beef farms saw a small increase in between-farm differences in usage levels.

**Benchmarking**

Over 90% of dairy cattle farms, rearing farms, suckler cow farms, and beef farms recorded target zone usage levels for 2024. Only a small minority of farms had persistently high usage levels in 2024.

***Table 6. 2023 and 2024 benchmarking results for cattle farms according to the respective SDa-defined action thresholds, by type of farm***

| Number of farms | Type of farm | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Dairy cattle farms | | Rearing farms | | Suckler cow farms | | Beef farms | |
| | 2023 | 2024 | 2023 | 2024 | 2023 | 2024 | 2023 | 2024 |
| In target zone | 13,618 (97%) | 13,240 (96%) | 668 (96%) | 542 (95%) | 7,316 (92%) | 7,233 (92%) | 2,492 (97%) | 2,401 (96%) |
| In action zone | 462 (3%) | 499 (4%) | 26 (4%) | 27 (5%) | 621 (8%) | 600 (8%) | 87 (3%) | 92 (4%) |
| With persistently high usage levels | 171 (1%) | 183 (1%) | 7 (1%) | 7 (1%) | 298 (4%) | 297 (4%) | 31 (1%) | 25 (1%) |

## Layer farming sector

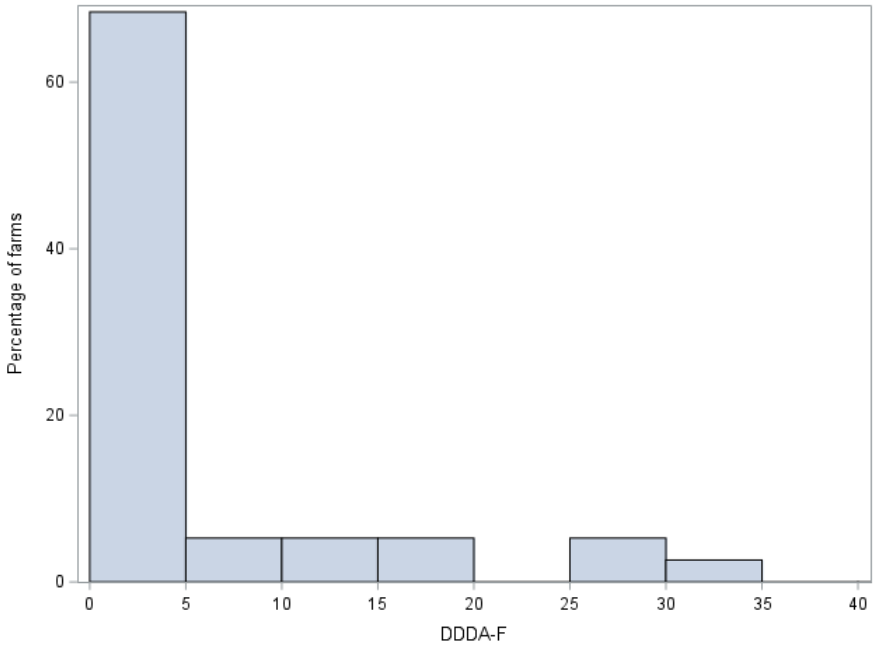
**Antibiotic use by type of farm**

Mean antibiotic use at layer farms is low and stable, at a level of about 1-2 $DDDA_F$. Most layer farms (76.7%) did not record any antibiotic use for 2024. At several layer farms, the amount of colistin used was relatively large, which remains a source of concern. Mean colistin use at layer farms remained stable in 2024 (at 0.5 $DDDA_F$).

Although antibiotic use at pullet rearing farms was low in 2024, differences in usage levels between individual farms were more pronounced than in previous years.

While the majority (66%) of layer parent/grandparent stock rearing farms did not use any antibiotics in 2024, high usage levels were recorded for some rearing farms. As a result, mean antibiotic use has more than doubled (from 8.1 to 17.6 $DDDA_F$) and rearing farms' 2024 $DDDA_F$ values show considerable variation (see Figure 13). In such a small subsector (with only 38 farms), a limited number of farms can exert a considerable influence on the mean $DDDA_F$ value. Layer parent/grandparent stock rearing farms also recorded relatively high usage levels for second-choice antibiotics, with second-choice antibiotics accounting for 75% of antibiotic use at these farms. The data suggest that a further reduction of the amounts of antibiotics used should be feasible for these farms. Antibiotic use at layer parent/grandparent stock production farms remained low in 2024.

***Figure 13. 2024 $DDDA_F$ distribution for layer parent/grandparent stock rearing farms (N = 38)***

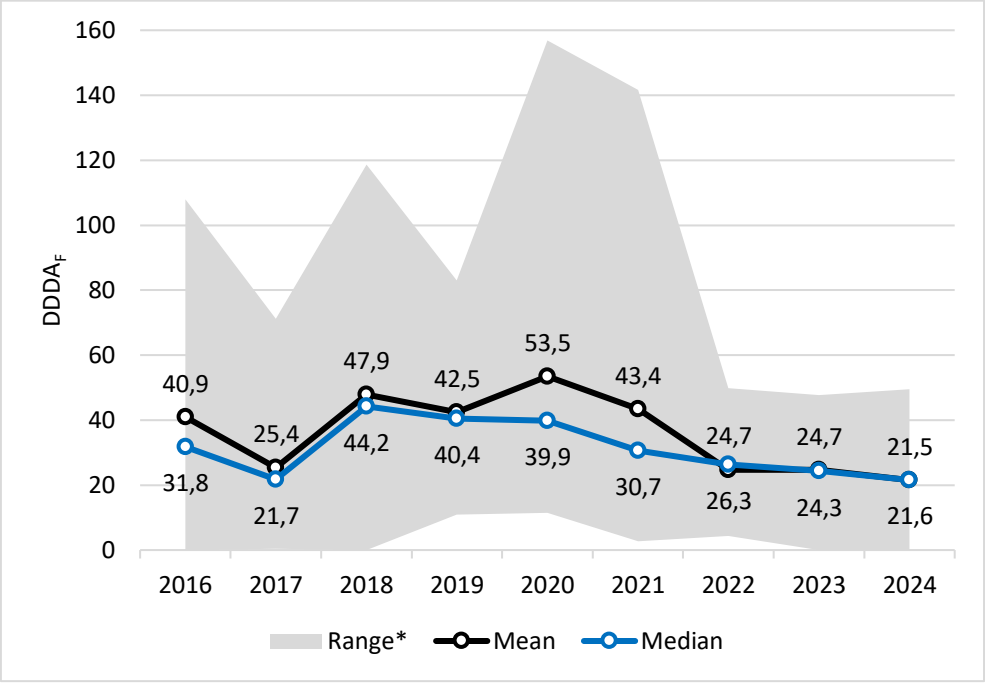


## Smaller food-producing livestock sectors

### Rabbit farming sector

Antibiotic use in the rabbit farming sector fell by 12.2% in 2024. At 22.6 $DDDA_{NAT}$, it has reached the lowest level in the sector's monitoring history. The reduction compared to the rabbit farming sector's $DDDA_{NAT}$ value recorded for 2016, the year in which SDa monitoring was initiated, currently amounts to 44.9%.
The sector's farm-level data also show progress, with rabbit farms' median antibiotic use decreasing from 24.3 $DDDA_F$ in 2023 to 21.2 $DDDA_F$ in 2024, and their mean antibiotic use decreasing from 24.7 to 20.8 $DDDA_F$. The range of $DDDA_F$ values for rabbit farms was similar to the 2023 $DDDA_F$ range and has now been stable for several years. The difference between the sector's $DDDA_{NAT}$ and mean $DDDA_F$ results is due to the respective calculation methods. The main difference between the two calculation methods comes down to $DDDA_{NAT}$ being a weighted measure, with larger farms contributing more heavily than smaller farms. In contrast, mean $DDDA_F$ is an unweighted measure, with all farms contributing equally.

***Figure 14. Long-term $DDDA_F$ trends for rabbit farms. The graph shows the mean and median $DDDA_F$ values and $DDDA_F$ ranges for the years concerned***




* The gray area represents the middle 90% of farms, with its lower limit corresponding to the 5th percentile and its upper limit corresponding to the 95th percentile.

**Benchmarking**

In 2022, a 30 $DDDA_F$ provisional benchmark threshold was established for rabbit farms. In 2024, the proportion of rabbit farms with antibiotic usage levels below this SDa-defined action threshold rose to 77%. Six of the seven rabbit farms that did exceed this action threshold, had also recorded action zone usage levels for 2023. When interpreting the rabbit farming sector's benchmarking results, the scale of the sector should be taken into consideration. In 2024, this livestock sector comprised only 31 farms.

To help rabbit farmers move toward their SDa-defined benchmark threshold, the rabbit farming sector and the Ministry of Agriculture, Fisheries, Food Security and Nature had originally agreed on the use of two transitional benchmark thresholds. As of 2024, the rabbit farming sector is only benchmarked by means of its SDa-defined action threshold of 30 $DDDA_F$.

The 30 $DDDA_F$ provisional benchmark threshold was evaluated by the SDa expert panel in late 2024, after which it was decided not to adjust the benchmark threshold at that time.

It will be reevaluated later this year, informed by the rabbit farming sector's 2024 antibiotic usage data.

***Table 7. 2023 and 2024 benchmarking results for rabbit farms according to the SDa-defined action threshold***

| Number of farms | Rabbit farms | |
|---|---|---|
| | 2023 | 2024 |
| In target zone | 22 (71%) | 24 (77%) |
| In action zone | 9 (29%) | 7 (23%) |
| With persistently high usage levels | 6 (19%) | 5 (16%) |

## Turkey farming sector

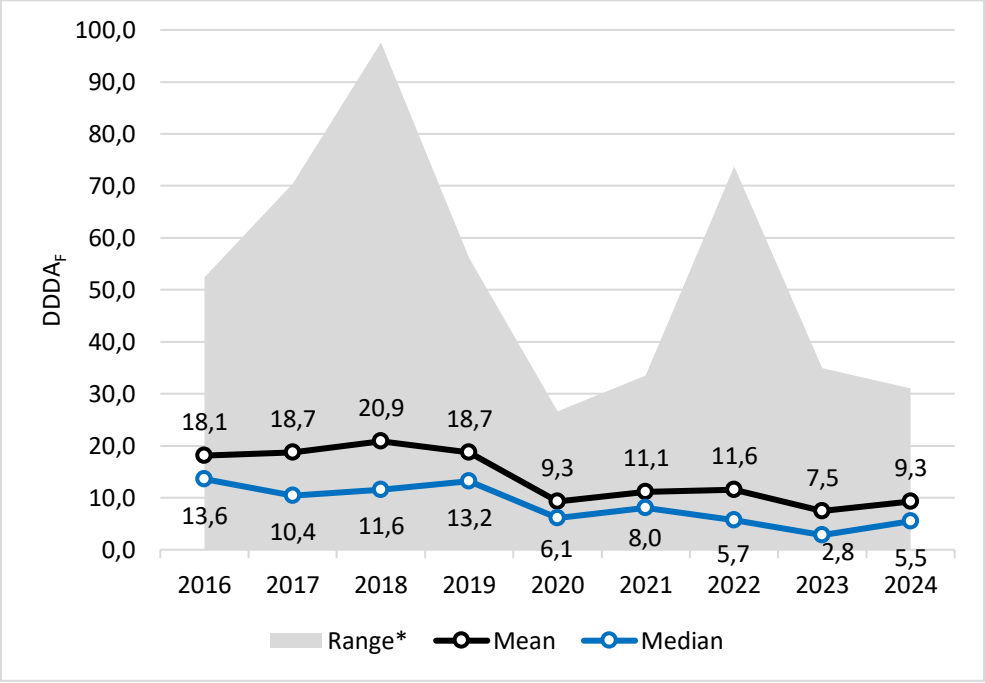
In 2024, the turkey farming sector comprised only 30 active farms. Consequently, a small number of farms with high antibiotic usage levels had a considerable impact on the sector's antibiotic use.

While the sector's 2023 $DDDA_{NAT}$ value had suggested the beginning of a downward trend, the 2024 data paint a different picture, showing a 43.1% increase. Despite this rise, the sector's current $DDDA_{NAT}$ value of 8.71 remains below the 2022 level.

The relative contribution of second-choice antibiotics to the turkey farming sector's antibiotic use dropped from 50.6% in 2023 to 38.1% in 2024, while the relative contribution of first-choice antibiotics rose markedly (see Table A1 in Appendix 1).

With regard to farm-level antibiotic usage data, the sector's mean and median $DDDA_F$ values both increased following the steep decline recorded for 2023. This rise in mean and median antibiotic use was mainly the result of five turkey farms which had recorded 0 $DDDA_F$ usage levels for 2023 ceasing their operations. When only including farms active in both 2023 and 2024 in mean $DDDA_F$ calculations, mean usage levels for 2023 and 2024 are similar. The sector's increase in mean $DDDA_F$ is less pronounced than its $DDDA_{NAT}$ increase. Calculation method differences are a contributing factor in this respect, since $DDDA_{NAT}$ calculations are based on a standardized body weight, whereas $DDDA_F$ calculations are based on animals' weight at the time of treatment. 2024 saw an increase in animals' weight at the time of treatment. Due to calculation method differences, this has not been accounted for in the sector's $DDDA_{NAT}$ value while the mean $DDDA_F$ value does account for this. 2024 also saw slightly smaller between-farm differences in usage levels than the year before (Figure 15). Farm-level usage data have shown year-to-year fluctuations since 2020 (Figure 15).

***Figure 15. Long-term $DDDA_F$ trends for turkey farms. The graph shows the mean and median $DDDA_F$ values and $DDDA_F$ ranges for the years concerned***




* The gray area represents the middle 90% of farms, with its lower limit corresponding to the 5th percentile and its upper limit corresponding to the 95th percentile.

**Benchmarking**

For turkey farms, a 10 $DDDA_F$ provisional benchmark threshold has been established by the SDa. In 2024, the absolute number of turkey farms with action zone usage levels remained unchanged at 10 (out of a total of 30 farms that year). The number of turkey farms with persistently high usage levels decreased to 6 (Table 8).

To help turkey farmers move toward their SDa-defined benchmark threshold in a more gradual fashion, the turkey farming sector and the Ministry of Agriculture, Fisheries, Food Security and Nature have agreed on the application of transitional benchmark thresholds (see Table A55 in Appendix 1). In 2024, the initial 20 $DDDA_F$ transitional action threshold was replaced by a more stringent transitional action threshold of 16 $DDDA_F$. Six turkey farms (20%) exceeded their new (16 $DDDA_F$) transitional action threshold in 2024, and have therefore been included in the sector-negotiated action zone. Two turkey farms recorded usage levels between 12 and 16 $DDDA_F$, consistent with the new sector-negotiated signaling zone.

The SDa expert panel evaluated the turkey farming sector's current benchmark thresholds in 2024. Following this evaluation, it has recommended to speed up the phased implementation of the SDa-defined benchmark threshold by implementing its 10 $DDDA_F$ provisional action threshold in 2026.
Reduction efforts in the turkey farming sector should be aimed at reducing the amounts of antibiotics used at turkey farms with high or persistently high $DDDA_F$ values. If the four turkey farms with usage levels in excess of 20 $DDDA_F$ were to be excluded from the mean $DDDA_F$ calculation, this would lower the turkey farming sector's mean $DDDA_F$ value from 9.3 (the actual level) to 5.6.

***Table 8. 2023 and 2024 benchmarking results for turkey farms according to both the SDa-defined action threshold and sector-negotiated transitional benchmark thresholds***

| Type of benchmark threshold(s) | Number of farms | Turkey farms | |
|---|---|---|---|
| | | 2023 | 2024 |
| SDa-defined | In target zone | 23 (70%) | 20 (67%) |
| | In action zone | 10 (30%) | 10 (33%) |
| | With persistently high usage levels | 8 (24%) | 6 (20%) |
| Sector-negotiated (transitional) | In target zone | 27 (82%) | 22 (73%) |
| | In signaling zone | 3 (9%) | 2 (7%) |
| | In action zone | 3 (9%) | 6 (20%) |
| | With persistently high usage levels | 2 (6%) | 1 (3%) |

## Duck farming sector

This is the first SDa report with antibiotic usage data for the duck farming sector. With 43 duck farms in 2024, this is a small livestock sector. At the moment, there is no legal requirement to record the amounts of antibiotics used in this sector. This report presents sector-provided usage data for the years 2021 to 2024, recorded on a voluntary basis by veterinarians. Data are provided for three types of farms: fattening duck farms, rearing and production farms, and production-only farms.

Antibiotic use in the duck farming sector is very low (Table 9). Throughout the 2021-2024 period, antibiotics were only used occasionally at the three types of farms. For 2024, veterinarians did not report any antibiotic use at fattening duck farms and production-only farms. Antibiotics were used on three occasions (totaling 25 $DDDA_F$) at one of the two rearing and production farms, while the other rearing and production farm did not use antibiotics at all. No third-choice antibiotics were used in the duck farming sector.

***Table 9. 2021-2024 $DDDA_F$ data for duck farms, by type of farm***

| Type of farm | Year | N | Mean | Median | P75 | P90 |
|---|---|---|---|---|---|---|
| Fattening duck farms | 2021 | 42 | 0.9 | 0.0 | 0.0 | 4.3 |
| | 2022 | 41 | 0.4 | 0.0 | 0.0 | 0.0 |
| | 2023 | 37 | 0.2 | 0.0 | 0.0 | 0.0 |
| | 2024 | 33 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rearing and production farms | 2021 | 3 | 0.6 | 0.0 | 1.9 | 1.9 |
| | 2022 | 3 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 2023 | 2 | 0.8 | 0.8 | 1.6 | 1.6 |
| | 2024 | 2 | 12.5 | 12.5 | 25.0 | 25.0 |
| Production-only farms | 2021 | 8 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 2022 | 8 | 3.7 | 0.0 | 7.8 | 14.1 |
| | 2023 | 7 | 2.8 | 0.0 | 4.4 | 15.1 |
| | 2024 | 8 | 0.0 | 0.0 | 0.0 | 0.0 |

# Veterinarians' prescription patterns

## Evaluation of the benchmarking method for veterinarians

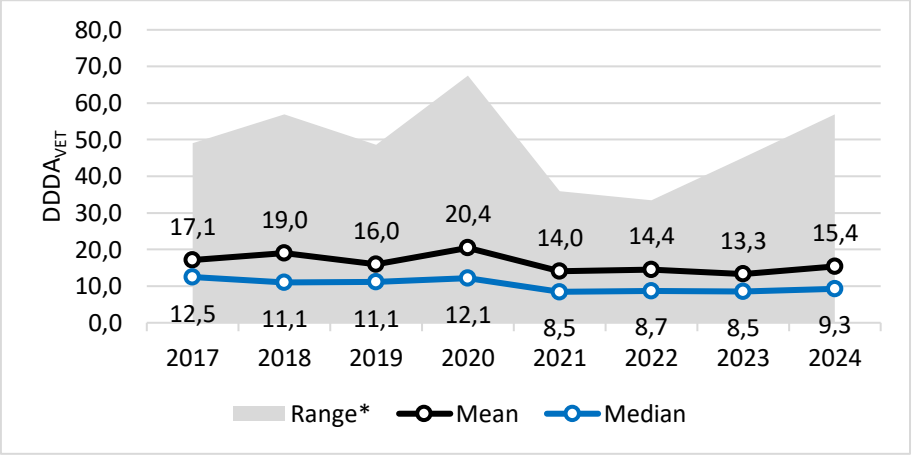
Since 2021, the Veterinary Benchmark Indicator (VBI) has been calculated based on Defined Daily Doses Animal (DDDA), in line with the calculation method used for livestock farms. Livestock farms with persistently high usage levels are not included in VBI calculations. For farms with persistently high usage levels, the veterinarian and farmer concerned are to develop a joint approach aimed at reducing the farm's antibiotic usage level. In 2024, this benchmarking method was evaluated by the SDa expert panel. The results of this evaluation are presented in a memorandum, which is provided as an online appendix to this report (Appendix 2). The SDa expert panel's memorandum presents veterinarians' prescription pattern trends and benchmarking results. It also compares the VBI and $DDDA_{VET}$ (Defined Daily Dose Animal Veterinarian) in terms of their suitability as benchmark indicators for assessing veterinarians' prescription patterns.
As a result of this evaluation, the SDa expert panel has decided to start using the $DDDA_{VET}$ – already used to monitor prescription pattern trends – as its indicator for benchmarking veterinarians. The main reasons for this decision were the $DDDA_{VET}$'s suitability for both benchmarking and monitoring purposes, and the fact that $DDDA_{VET}$ results are easier to interpret than VBI results, as a veterinarian's $DDDA_{VET}$ value represents the number of days per year that the average animal in a population under the veterinarian's care was treated with antibiotics.
This year's report includes both VBI- and $DDDA_{VET}$-based benchmarking results, while veterinarians' prescription pattern trends are presented exclusively based on $DDDA_{VET}$ values.

## Prescription pattern trends

In 2024, prescription patterns of veterinarians of **dairy cattle**, **non-dairy cattle**, and **slower growing broiler breeds** were similar to their 2023 prescription patterns. Their prescribing levels were low and differences between individual veterinarians were limited (Figures A41, A42 and A43, respectively, in Appendix 1).
With regard to veterinarians in the pig farming sector, mean prescribing levels rose slightly for all production categories, with differences between individual veterinarians becoming more pronounced. Despite this development, veterinarians' prescribing levels for the **sows and suckling piglets** and **fattening pigs** production categories were still low, with relatively little inter-veterinarian variation (Figures A46 and A47 in Appendix 1).
Differences in prescribing levels between veterinarians of **weaner pigs** increased in 2024.

Reducing the amount of antibiotics prescribed for this production category is seen as a desirable and feasible goal (Figure 16).

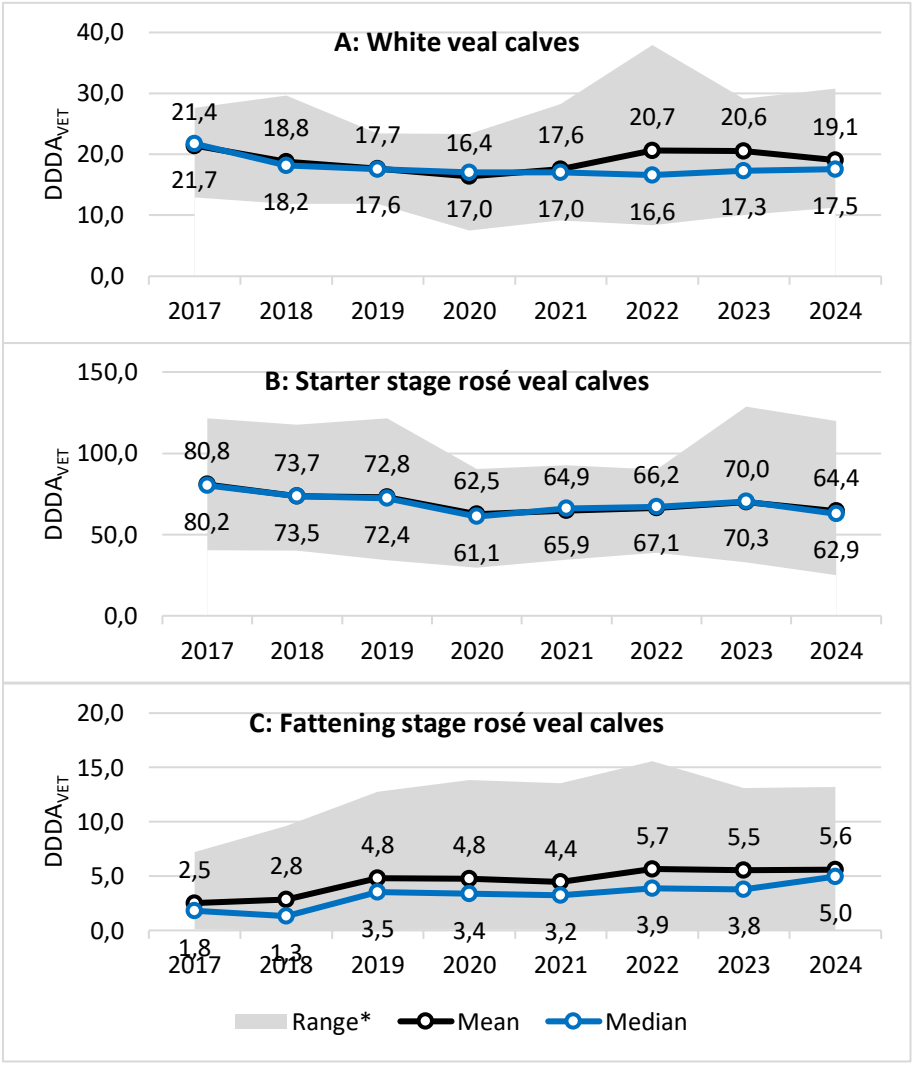
***Figure 16. Long-term $DDDA_{VET}$ trends for veterinarians of weaner pigs. The graph shows the mean and median $DDDA_{VET}$ values and $DDDA_{VET}$ ranges for the years concerned***




* The gray area represents the middle 90% of veterinarians, with its lower limit corresponding to the 5th percentile and its upper limit corresponding to the 95th percentile.

In 2024, the prescription pattern of veterinarians of **white veal calves** was similar to the pattern observed for 2023 (Figure 17a). Their $DDDA_{VET}$ values show no distinct long-term trend. Their prescribing levels were relatively high, with considerable variation between individual veterinarians (Table 10). $DDDA_{VET}$ data for veterinarians of **starter stage rosé veal calves** show high prescribing levels and substantial inter-veterinarian variation. However, both the mean and median $DDDA_{VET}$ values, as well as the prescribing level differences between veterinarians, declined in 2024 (Figure 17b). The amounts of antibiotics prescribed for **fattening stage rosé veal calves** trended upward from 2017 to 2022. Although veterinarians' mean prescribing level appears to have stabilized since 2023, there is still a high degree of variation between individual $DDDA_{VET}$ values (Figure 17c and Table 10).

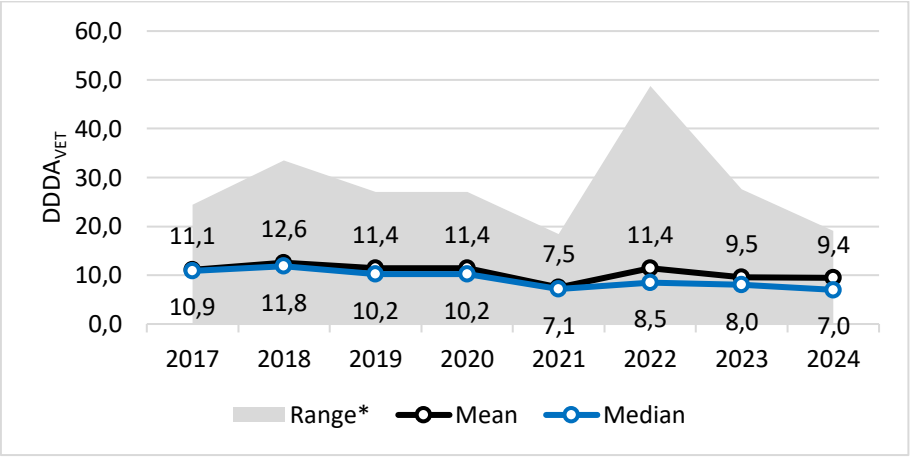
***Figures 17a to 17c. Long-term $DDDA_{VET}$ trends for veterinarians of veal calves. The graphs show the mean and median $DDDA_{VET}$ values and $DDDA_{VET}$ ranges for the years concerned***




* The gray area represents the middle 90% of veterinarians, with its lower limit corresponding to the 5th percentile and its upper limit corresponding to the 95th percentile.

For veterinarians of **conventional broiler breeds**, 2024 saw a reduction in prescribing level differences between individual veterinarians, alongside a decrease in their median $DDDA_{VET}$ value (Figure 18). Their long-term $DDDA_{VET}$ data show some improvement over the years. The current degree of $DDDA_{VET}$ variation between individual veterinarians suggests there is still room to reduce the amount of antibiotics prescribed for conventional broiler breeds (Table 10).

***Figure 18. Long-term $DDDA_{VET}$ trends for veterinarians of conventional broiler breeds. The graph shows the mean and median $DDDA_{VET}$ values and $DDDA_{VET}$ ranges for the years concerned***




* The gray area represents the middle 90% of veterinarians, with its lower limit corresponding to the 5th percentile and its upper limit corresponding to the 95th percentile.

Only a few veterinarians were active in the **turkey farming sector**. Their $DDDA_{VET}$ data show that the pronounced prescribing level reduction recorded for 2023 was followed by a rise in 2024, similar to the rise in $DDDA_{F}$-based usage level data for turkey farms.

***Table 10. 2024 $DDDA_{VET}$ data, by production category. Provided are the mean and median $DDDA_{VET}$ values, and the 75$^{th}$ and 90$^{th}$ percentiles***

| Livestock sector | Production category | N | Mean | Median | P75 | P90 |
|---|---|---|---|---|---|---|
| Broiler farming sector | Conventional breeds | 62 | 9.4 | 7.0 | 12.5 | 17.6 |
| | Slower growing breeds | 64 | 1.2 | 0.8 | 1.8 | 2.9 |
| Turkey farming sector | Turkeys | 8 | 8.2 | 5.6 | 13.0 | 24.7 |
| Pig farming sector | Sows/suckling piglets | 154 | 3.2 | 2.4 | 4.0 | 5.7 |
| | Weaner pigs | 155 | 15.4 | 9.3 | 16.8 | 29.1 |
| | Fattening pigs | 184 | 3.3 | 2.4 | 3.3 | 5.0 |
| Veal farming sector | White veal calves | 61 | 19.1 | 17.5 | 20.3 | 25.7 |
| | Starter stage rosé veal calves | 57 | 64.4 | 62.9 | 82.7 | 99.8 |
| | Fattening stage rosé veal calves | 87 | 5.6 | 5.0 | 8.6 | 11.4 |
| | Calves at rosé veal combination farms | 36 | 17.3 | 16.3 | 23.1 | 30.0 |
| Cattle farming sector | Dairy cattle | 670 | 2.6 | 2.5 | 2.8 | 3.2 |
| | Cattle at rearing farms | 171 | 0.2 | 0.0 | 0.4 | 1.0 |
| | Suckler cows | 660 | 0.6 | 0.4 | 0.8 | 1.5 |
| | Beef bulls | 350 | 0.6 | 0.2 | 0.7 | 1.4 |
| | Non-dairy cattle combined | 667 | 0.6 | 0.4 | 0.8 | 1.4 |

## Prescription pattern differences between veterinary practices

A study published in 2020 has shown that veterinarians' prescription patterns also vary considerably between veterinary practices (Speksnijder et al., 2020). For this reason, the SDa expert panel recommends including the prescribing veterinarian's veterinary practice (using an anonymized identifier) when recording prescription data. A better understanding of these differences between veterinary practices may contribute to an overall reduction in the amount of antibiotics prescribed, particularly in sectors that are still benchmarked by means of provisional benchmark thresholds and where prescription and usage levels still vary widely between individual veterinarians and livestock farms. This recommendation applies both to sectors already subject to antibiotic usage monitoring and to those yet to be included pursuant to Regulation (EU) 2019/6, commonly referred to as the Veterinary Medicinal Products Regulation (VMPR).

## Benchmarking of veterinarians

Veterinarians' prescription patterns for 2024 were still benchmarked using the VBI. Starting from the 2025 reporting period, the SDa will use the $DDDA_{VET}$ as its new benchmark indicator for veterinarians. As a preview of the SDa's new benchmarking method, both VBI- and $DDDA_{VET}$-based benchmarking results are presented in this year's report.

### VBI-based benchmarking results

Across all production categories, the majority of veterinarians (88% on average) have been included in the target zone (see Table 11). Among production categories with provisional benchmark thresholds, the highest proportions of veterinarians with action zone prescription patterns are observed for starter stage rosé veal calves (15%) and calves at rosé veal combination farms (35%). For the starter stage rosé veal calves production category, this constitutes an improvement compared to the 31% of veterinarians with action zone prescription patterns in 2023. Fourteen percent of veterinarians of fattening stage rosé veal calves have been included in the action zone. These benchmarking results indicate that prescription patterns of veterinarians in the veal farming sector still require attention.

Among veterinarians of conventional broiler breeds, the proportion with action zone prescription patterns dropped by 8% in 2024, from 30% to 22%. Only a few veterinarians were active in the turkey farming sector, and one of them has been included in the action zone.
With regard to the pig farming sector, all three production categories saw an increase in the proportion of veterinarians in the action zone, although the proportion with target zone prescribing levels remains at least 88% for each production category (Table 11). Across all other production categories (slower growing broiler breeds, white veal calves, dairy cattle, and non-dairy cattle), only a small proportion of veterinarians has been included in the action zone. The exclusion of farms with persistently high usage levels has had a substantial impact on the benchmarking results of veterinarians of white veal calves. The number of veterinarians included in the action zone would have been twice as high if farms with persistently high usage levels had contributed to the veterinarians' VBI values.

Veterinarians in livestock sectors with sector-negotiated transitional benchmark thresholds for 2024 (i.e. the broiler and turkey farming sectors) have also been benchmarked according to those benchmark thresholds, which are currently still used to assess their prescription patterns. These benchmarking results are presented in Table 12.

The proportions of veterinarians with action zone prescription patterns are smaller than the associated proportions of livestock farms with action zone usage levels. This is partly attributable to farms with persistently high usage levels not contributing to VBI values. For livestock sectors in which persistently high usage levels are common, such as the veal farming sector, this results in a substantial percentage of farms being excluded from VBI calculations.

***Table 11. 2024 benchmarking results for veterinarians according to the VBI-based benchmarking method implemented in 2021. Benchmark thresholds representing acceptable use are printed in bold***

| Livestock sector | Production category | Benchmark threshold | N | Target zone | | Action zone | |
|---|---|---|---|---|---|---|---|
| | | | | N | % | N | % |
| Broiler farming sector | Conventional breeds | **8** | 55 | 43 | 78% | 12 | 22% |
| | Slower growing breeds | **8** | 63 | 62 | 98% | 1 | 2% |
| Turkey farming sector | Turkeys | 10 | 8 | 7 | 88% | 1 | 13% |
| Pig farming sector | Sows/suckling piglets | **5** | 154 | 136 | 88% | 18 | 12% |
| | Weaner pigs | 20 | 155 | 139 | 90% | 16 | 10% |
| | Fattening pigs | **5** | 184 | 173 | 94% | 11 | 6% |
| Veal farming sector | White veal calves | 23 | 58 | 53 | 91% | 5 | 9% |
| | Starter stage rosé veal calves | 67 | 53 | 45 | 85% | 8 | 15% |
| | Fattening stage rosé veal calves | **4** | 79 | 68 | 86% | 11 | 14% |
| | Calves at rosé veal combination farms | 12 | 23 | 15 | 65% | 8 | 35% |
| Cattle farming sector | Dairy cattle | **5** | 669 | 661 | 99% | 8 | 1% |
| | Non-dairy cattle combined | **2** | 662 | 653 | 99% | 9 | 1% |

***Table 12. Benchmarking results for veterinarians in livestock sectors with transitional benchmark thresholds, according to the VBI-based benchmarking method implemented in 2021***

| Livestock sector | Production category | Benchmark thresholds | Target zone | | Signaling zone | | Action zone | |
|---|---|---|---|---|---|---|---|---|
| | | | N | % | N | % | N | % |
| Broiler farming sector | Conventional breeds | 12 + 24 | 43 | 70% | 17 | 28% | 1 | 2% |
| | Slower growing breeds | 8 + 12 | 62 | 98% | 1 | 2% | 0 | 0% |
| Turkey farming sector | Turkeys | 12 + 16 | 7 | 88% | 0 | 0% | 1 | 13% |

## $DDDA_{VET}$-based benchmarking results

Table 13 shows veterinarians' $DDDA_{VET}$-based benchmarking results. This benchmarking method yields a higher proportion of veterinarians in the action zone than the VBI-based method (Table 11). Production categories for which persistently high usage levels are a regular occurrence (all categories of veal calves, and conventional broiler breeds) show considerable differences between the two benchmarking methods. For the other production categories, differences between the two types of benchmarking results are limited, with the majority of veterinarians recording target zone prescription patterns according to their $DDDA_{VET}$ values.

The tables differ in the listed number of veterinarians: the number of veterinarians with $DDDA_{VET}$-based benchmarking results exceeds the number of veterinarians with VBI-based benchmarking results. This is because certain veterinarians had only worked with farms with persistently high usage levels. For those veterinarians, no VBI value could be calculated.

***Table 13. 2024 benchmarking results for veterinarians according to the $DDDA_{VET}$-based benchmarking method (to be used by the SDa expert panel from the 2025 reporting period onward). Benchmark thresholds representing acceptable use are printed in bold***

| Livestock sector | Production category | Benchmark threshold | N | Target zone | | Action zone | |
|---|---|---|---|---|---|---|---|
| | | | | N | % | N | % |
| Broiler farming sector | Conventional breeds | **8** | 62 | 32 | 62% | 20 | 38% |
| | Slower growing breeds | **8** | 64 | 63 | 98% | 1 | 2% |
| Turkey farming sector | Turkeys | 10 | 8 | 6 | 75% | 2 | 25% |
| Pig farming sector | Sows/suckling piglets | **5** | 154 | 131 | 85% | 23 | 15% |
| | Weaner pigs | 20 | 155 | 126 | 81% | 29 | 19% |
| | Fattening pigs | **5** | 184 | 166 | 90% | 18 | 10% |
| Veal farming sector | White veal calves | 23 | 61 | 51 | 84% | 10 | 16% |
| | Starter stage rosé veal calves | 67 | 57 | 32 | 56% | 25 | 44% |
| | Fattening stage rosé veal calves | **4** | 87 | 40 | 46% | 47 | 54% |
| | Calves at rosé veal combination farms | 12 | 36 | 11 | 31% | 25 | 69% |
| Cattle farming sector | Dairy cattle | **5** | 690 | 681 | 99% | 9 | 1% |
| | Non-dairy cattle combined | **2** | 667 | 638 | 96% | 29 | 4% |

***Table 14. Benchmarking results for veterinarians in livestock sectors with transitional benchmark thresholds, according to the $DDDA_{VET}$-based benchmarking method (to be used by the SDa expert panel from the 2025 reporting period onward)***

| Livestock sector | Production category | Benchmark thresholds | Target zone | | Signaling zone | | Action zone | |
|---|---|---|---|---|---|---|---|---|
| | | | N | % | N | % | N | % |
| Broiler farming sector | Conventional breeds | 12 + 24 | 44 | 71% | 17 | 27% | 1 | 2% |
| | Slower growing breeds | 8 + 12 | 63 | 98% | 1 | 2% | 0 | 0% |
| Turkey farming sector | Turkeys | 12 + 16 | 6 | 75% | 1 | 13% | 1 | 13% |

# Livestock sectors' progress toward government-defined reduction targets

Following the introduction of new benchmark thresholds in 2019, the Dutch government and the livestock sectors discussed and agreed on antibiotic usage level reduction targets. Those agreements were based on the SDa's pre-2019 benchmarking method which relied on both a signaling threshold and an action threshold, whereas the SDa's current benchmarking method is based on just a single benchmark threshold per type of farm or production category. The veal, pig and broiler farming sectors and the Ministry of Agriculture, Fisheries, Food Security and Nature agreed on the following reduction targets, with 2017 as the reference year: by 2022, a 25% reduction in the number of farms exceeding the old signaling threshold (for pig farms) or the old action threshold (for broiler and veal farms), and by 2024, a 50% reduction in the number of farms exceeding their old signaling or action threshold. The veal farming sector additionally agreed to realize a 15% reduction from its 2017 $DDDA_{NAT}$ value by 2022.

The broiler and pig farming sectors have met both of their government-defined reduction targets. The veal farming sector did meet its 15% $DDDA_{NAT}$ reduction target by 2022, but has not managed to realize the 50% reduction in the number of farms with action zone usage levels by the end of 2024. The number of rosé veal starter farms with action zone usage levels has only been reduced by 2.9%, and rosé veal fattening farms even show an increase in the number of farms in the action zone. These results should, however, be interpreted in the context of the change in the allocation of delivery record data to either the starter or fattening stage. White veal farms, on the other hand, have met their 2024 reduction target of 50% (see Table A57 in Appendix 1).

The targeted reductions in the number of farms exceeding their old signaling or action threshold do not account for any changes in the number of active farms over the years. In a contracting livestock sector, a decrease in the number of farms included in the action zone does not necessarily indicate a reduction in antibiotic usage levels. In this context, the proportion of farms in the action zone would be a more accurate measure. If reduction target results are adjusted to account for changes in the number of active livestock farms, smaller reductions are observed (Table A57 in Appendix 1). However, the broiler and pig farming sectors' adjusted reductions still meet the 50% reduction target.

The SDa expert panel would like to note that high usage levels in the context of reduction target agreements between livestock sectors and the Dutch government are distinct from *persistently* high usage levels, a concept introduced by the SDa in 2020 in light of the introduction of its new benchmarking method for veterinarians. In the context of this benchmarking method, livestock farms are deemed to have persistently high usage levels if their $DDDA_F$ values have exceeded the action threshold for two years in a row. Livestock farms with persistently high usage levels are not included when calculating a veterinarian's VBI value, and these farms require targeted measures aimed at reducing their antibiotic usage levels. Although livestock sectors and veterinarians have committed themselves to help reduce the number of livestock farms with persistently high usage levels, no quantitative reduction targets have been set in this respect.

# Antibiotic monitoring in an international context

## Implications of Regulation (EU) 2019/6 for antibiotic monitoring in the Netherlands

On January 28, 2022, Regulation (EU) 2019/6 of the European Parliament and of the Council of 11 December 2018 on veterinary medicinal products entered into force, repealing the directive on the Community code relating to veterinary medicinal products, Directive 2001/82/EC (EUR-Lex, 2019). Regulation (EU) 2019/6, commonly referred to as the Veterinary Medicinal Products Regulation (VMPR), sets out that all EU member states are to collect data on the sales and use of antimicrobials (including antibiotics) used in animals and are to report their data to the European Medicines Agency (EMA).

**Expansion of antibiotic usage monitoring**

The VMPR provides for a phased expansion of national monitoring obligations, with additional animal species to be included at specific time points. As of **2024**, data on the use of antimicrobial medicinal products in the main food-producing livestock populations have to be reported, with the reported data pertaining to the preceding calendar year. This initial reporting obligation concerns data on antimicrobial use in all types of cattle (with the Netherlands having to report data pertaining to veal calves separately), pigs, broilers, and turkeys. As of **2027**, data on the use of antimicrobials in goats, sheep, ducks, geese, layers, farmed fish, and all horses (including those not intended for human consumption) during the preceding calendar year will have to be reported too. The goat, duck, and layer reporting categories are already part of the SDa's current monitoring process, but monitoring with regard to the other animal populations mentioned is yet to be initiated.

As of **2030**, member states will also have to report on antimicrobial use, during the preceding calendar year, in companion animals (i.e. dogs and cats) and fur animals. With its current monitoring process, the Netherlands meets its phase 1 monitoring obligations as of 2024. The subsequent phases from 2027 onward still require the development and implementation of various additional data collection systems.

**Expansion of antibiotic sales monitoring**

In 2023, sales data reporting was expanded to include data on all antibiotics sold. Since then, sales volume data also include any antibiotic veterinary medicinal products purchased in other EU countries for use under the cascade, for instance in the event no suitable veterinary medicinal products were available in the Netherlands.

To minimize the administrative burden at all levels, EMA has established the Union Product Database (UPD) to facilitate comprehensive sales data reporting. Marketing authorization holders are required to record the annual volumes of sales for their veterinary medicinal products in this database. EMA will extract the sales data from the UPD and ask member states to validate the data. The Ministry of Agriculture, Fisheries, Food Security and Nature serves as our country's rapporteur, and the SDa and FIDIN will be responsible for verifying the reported data. Following verification, the data will also be included in the SDa's annual report on the usage of antibiotics in agricultural livestock in the Netherlands.

**Considerations for the implementation of Regulation (EU) 2019/6**
Expanding antibiotic usage monitoring by including the additional animal species referred to above, is associated with certain challenges:

- At the moment, no quality assurance systems are in place for the additional animal species. Previously, pre-existing quality assurance systems facilitated the rapid implementation of antibiotic usage monitoring in other sectors.
- At present, no accurate data on the number of horses and companion animals in the Netherlands are available, even though this information is essential for standardizing antibiotic use.
- The ease with which horse and companion animal owners are able to change veterinarians can make it more difficult to maintain reliable usage records.
- Magistral preparations, primarily used in companion animals, are currently not recorded at all.

In light of these considerations, the SDa expert panel recommends that the necessary preparations be initiated in a timely manner. At the request of the Ministry of Agriculture, Fisheries, Food Security and Nature, the SDa has begun outlining scenarios for implementing antibiotic usage monitoring for horses and companion animals.

The SDa expert panel recommends recording prescription data in line with those collected in other sectors. This would mean inclusion of at least the following information:

- The veterinarian's ID (anonymized)
- The animal owner or keeper's business ID (anonymized) (for animal species kept for commercial purposes)

- The average numbers of animals present at the business location (for animal species kept for commercial purposes)
- The EAN code of the prescribed antibiotic
- The number of prescribed packages
- The prescription date of the antibiotic

The SDa expert panel also recommends recording the veterinary practice of the prescribing veterinarian. This recommendation applies to sectors already subject to antibiotic usage monitoring as well as sectors yet to be included. A study has shown that veterinary practices vary substantially in the amount of antibiotics prescribed (Speksnijder et al., 2020).

As antibiotic use in the additional animal species is expected to be low, there is currently no indication that benchmarking would be required. However, the SDa expert panel would like to stress that benchmarking should be possible if deemed necessary based on antibiotic usage or new insights into the risk of resistance development in these animal species.

## European reporting of antimicrobial sales and use data

Recently, EMA has published its first European Sales and Use of Antimicrobials for veterinary medicine (ESUAvet) annual surveillance report, with data on antimicrobial sales and use in 2023 (EMA, 2025). This ESUAvet report marks the first time that sector-specific usage data have been collected and reported at the European level. Previous ESVAC reports only included voluntarily provided data on the volume of sales of antimicrobial veterinary medicinal products.

The ESUAvet report uses a new denominator to standardize sales volume data: animal biomass (kg). This denominator is similar to the PCU, the denominator used in ESVAC reports, but comprises more animal species and categories and uses different standard weights. As a result, the animal biomass denominator is considerably higher than the PCU denominator. This means the new indicator of mg of active substance sold/kg of animal biomass does not allow for direct comparisons with the previous mg/PCU indicator. To enable monitoring of long-term sales trends and progress made toward the Farm to Fork Strategy antimicrobial sales reduction target, sales data are also still presented in mg/PCU.

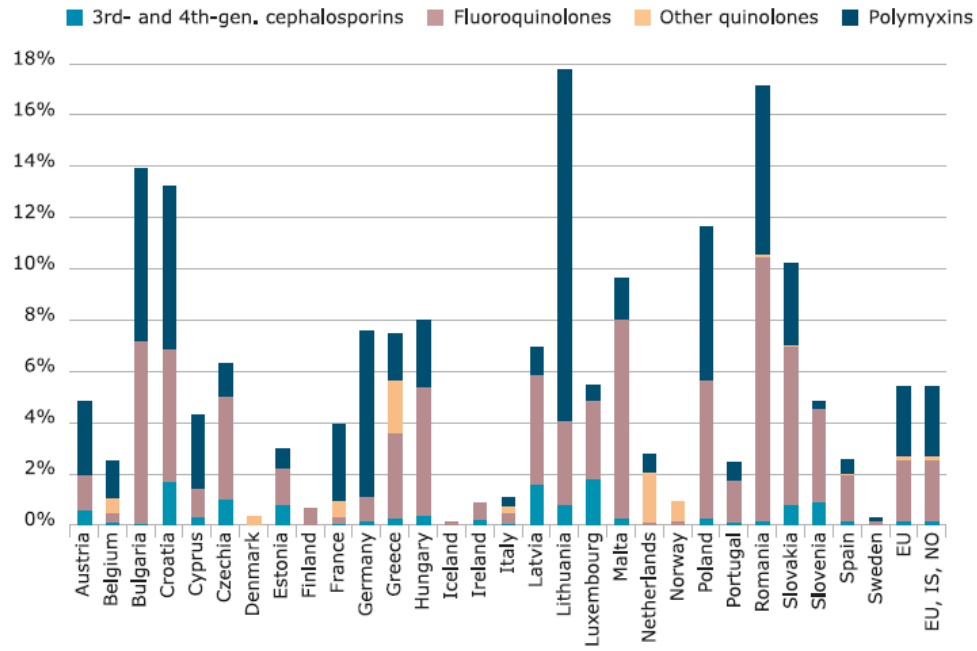
2024 was the first year in which all 27 EU countries and Iceland and Norway were legally required to report antimicrobial use data (pertaining to the preceding calendar year) for cattle, pigs, chickens and turkeys to EMA. The countries showed considerable variability in the quality and completeness of the reported use data for 2023. The data covered only part (22-50%) of the total biomass of cattle, pigs, chickens and turkeys. Given the limited data coverage and the variability in data quality, no quantitative use data have been included in the report.

Summary of the key findings of the first ESUAvet report:

- In 2023, aggregated sales (in mg/PCU) increased by 4.3% compared to 2022.
- The 2023 value represents a 25.2% reduction from the value recorded for 2018, EMA's reference year. The antimicrobial sales reduction target is a 50% reduction from the 2018 reference value by 2030.
- AMEG category B antimicrobials (third- and fourth-generation cephalosporins, fluoroquinolones, other quinolones, and polymyxins) accounted for 5.4% of total EU sales.
- Sales of antimicrobial veterinary medicinal products in the Netherlands amounted to 22.0 mg/kg animal biomass, with the Netherlands ranking 16th out of the 29 participating countries in a sales volume ranking (with sales volumes ranked from lowest to highest). The weighted mean across all participating countries amounts to 43.8 mg/kg.
- In the Netherlands, total sales of antimicrobials classified as critically important for human medicine (AMEG category B) only represented a small proportion of total antimicrobial veterinary product sales (see Figure 19). By contrast, sales of other quinolones were high in both relative and absolute terms.
- The ESUAvet report also includes data on sales of antimicrobial veterinary medicinal products for non-food-producing animals. With regard to antimicrobial veterinary medicinal products for non-food-producing animals, sales reported for the Netherlands are relatively high. However, the accuracy of this estimate is limited. It is based on the sales of products exclusively authorized for use in non-food-producing animals. Information on the relative contribution of these products to antimicrobial use in non-food-producing animals, which will vary between countries, is not available. Moreover, only dogs, cats and fur animals are included in the animal biomass denominator for non-food producing animals, although the products in question may also have been prescribed for other non-food-producing animal species. As of 2030, countries are to report antimicrobial use data for dogs, cats and

fur animals separately, which is expected to result in more accurate estimates.

***Figure 19. Proportion of total sales (in metric tons) of third- and fourth-generation cephalosporins, fluoroquinolones, other quinolones, and polymyxins of total antimicrobial veterinary medicinal product sales for food-producing animals in 29 European countries***




Source: European Sales and Use of Antimicrobials for veterinary medicine (ESUAvet). Annual surveillance report for 2023 (EMA/CVMP/ESUAVET/80289/2025).

## Appendices

Appendix 1 to this report contains underlying data regarding the various livestock sectors and veterinarians active in these sectors. This appendix is available on the SDa website. Appendix 2, the SDa expert panel's memorandum entitled *Veterinarians' Prescription Patterns and an Evaluation of the Associated Benchmarking Method*, is also available on the SDa website.

## References

EMA. 2019. Categorisation of antibiotics in the European Union (EMA/CVMP/CHMP/682198/2017). https://www.ema.europa.eu/system/files/documents/report/ameg_-_categorisation_of_antibiotics_en.pdf.

EMA. 2021. European Surveillance of Veterinary Antimicrobial Consumption (ESVAC). https://www.ema.europa.eu/en/veterinary-regulatory/overview/antimicrobial-resistance/european-surveillance-veterinary-antimicrobial-consumption-esvac#annual-report-on-sales-of-veterinary-antimicrobial-medicinal-products-section.

EMA. 2023. Sales of veterinary antimicrobial agents in 31 European countries in 2022 (EMA/299538/2023). https://www.ema.europa.eu/en/documents/report/sales-veterinary-antimicrobial-agents-31-european-countries-2022-trends-2010-2022-thirteenth-esvac-report_en.pdf.

EMA. 2025 European Sales and Use of Antimicrobials for veterinary medicine (ESUAvet). Annual surveillance report for 2023 (EMA/CVMP/ESUAVET/80289/2025). https://doi.org/10.2809/4487470.

EUR-Lex. Version 28/01/2022. REGULATION (EU) 2019/6 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2018 on veterinary medicinal products and repealing Directive 2001/82/EC. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02019R0006-20220128&qid=1690816010498.

Netherlands Enterprise Agency (RVO). (2025, April). *Import-export kalveren t/m week 16 2025* [Import and export of calves in week 1 through 16 of 2025; Excel file]. https://www.rvo.nl/sites/default/files/2025-04/Import-export-kalveren-tm-wk-16-2025.xls.

Sanders P, Mevius D, Veldman K, van Geijlswijk I, Wagenaar JA, Bonten M, & Heederik D. 2021. Comparison of different antimicrobial use indicators and antimicrobial resistance data in food-producing animals. *JAC Antimicrob Resist*. 2021 Nov 5;3(4):dlab172.

Speksnijder, D. C., Sanders, P., Bens, D. L. A., Meijboom, F. L. B., Verheij, T. J. M., & Leneman, J. M. 2020. *Onderzoek naar kritische succesfactoren voor een laag antibiotica voorschrijfpatroon van dierenartsen: Rapport van het project Kritische Succesfactoren Dierenartsen (KSF Dierenartsen)* [A study of veterinarians' prescription patterns aimed at

identifying critical success factors for patterns characterized by low volumes of antibiotics: a report by the *Kritische Succesfactoren (KSF) Dierenartsen* project]. Utrecht University.

Statistics Netherlands (CBS). (2025, March 28). *Landbouw; gewassen, dieren en grondgebruik naar omvangsklasse en regio* [Agriculture; crops, livestock and land use by size category and region]. https://opendata.cbs.nl/#/CBS/nl/dataset/80787ned/table?dl=BB26D.

Statistics Netherlands (CBS). (2025, April 1). *Vleesproductie; aantal slachtingen en geslacht gewicht per diersoort* [Meat production; number of slaughterings and carcass weight by animal species category and stage]. https://opendata.cbs.nl/statline/#/CBS/nl/dataset/7123slac/table?dl=BB26C.

Stichting Brancheorganisatie Kalversector (SBK). 2024. *Toelichting traject (externe) begeleiding voor rode bedrijven* [Explanation of the external coaching program for rosé veal farms]. https://www.kalversector.nl/resources/uploads/2024/04/240401-Toelichting-traject-externe-begeleiding-voor-rode-bedrijven-versie-3.pdf.

Swinkels, A. F., Fischer, E. A., Korving, L., Christodoulou, R., Wagenaar, J. A., & Zomer, A. L. 2024. Flumequine, a fluoroquinolone in disguise. *NPJ Antimicrob Resist.* 2024 Oct 3;2(1):28.

**SDa, the Netherlands Veterinary Medicines Institute**
Yalelaan 114
3584 CM Utrecht
The Netherlands

Telephone: +31 (0)88 03 07 222
Email: info@autoriteitdiergeneesmiddelen.nl
**www.autoriteitdiergeneesmiddelen.nl**

**Usage of Antibiotics in Agricultural Livestock in the Netherlands in 2024**
Trends and benchmarking of livestock farms and veterinarians
SDa/1164/2024
The Netherlands Veterinary Medicines Institute, 2025