Antibiotics report

January 2023

Antibiotics.

Tesco is a member of the Food Industry Initiative on Antimicrobials (FIIA), which has the stated vision of 'Retailers, manufacturers, processors and food service companies coming together to promote and support responsible antimicrobial use and action on antimicrobial resistance'. The intention of this initiative is to support and engage with existing industry groups working in this area, ensuring work is aligned and avoiding duplication of effort.

The FIIA has 3 key areas of focus; Responsible Use, Research & Development and Data.

The Tesco antibiotic use commitments were developed and published in 2017 to ensure responsible antibiotic use is a key area of focus for our supply chains. These commitments were developed with our supply chain and industry experts. These align with FIIA commitments to support a common approach to embedding and evidencing responsible use principles, throughout each protein supply chain.

1. **We restrict the use of the highest priority "critically important" antibiotics for human health (fluoroquinolones, 3rd and 4th generation cephalosporin's and colistin)— as defined by the European Medicine Agency in our supply chain— and make sure these antibiotics are used only as a treatment of last resort, where no other viable treatment is available to prevent animal welfare issues. We are working with our suppliers to reduce the use of other critically important antibiotics, including macrolides.**

Progress:

The Tesco Welfare Approved (TWA) standards for all meat, farmed fish and eggs restrict the use of highest priority "critically important" antibiotics (HPCIAs). We continue to see a reduction in the use of HPCIAs and the complete elimination of key classes (e.g. Colistin) in the pig and poultry sectors. However, these key classes remain available to our supply chains where there is no other viable treatment to ensure animal welfare is not compromised. We evaluate therapeutic usage trends by every antibiotic class across our egg, continental pork and sustainable beef and lamb supply chains. In all sectors, any reported incidence of HPCIA use must be supported by documented evidence of clinical need, e.g. sensitivity testing which indicates that the disease-causing bacteria will only be responsive to that particular medicine.

2. **We work with our suppliers to make sure there is no unauthorised use of veterinary medicines, including antibiotics, in our supply chain.**

Progress:

No unauthorised use of veterinary medicines, including antibiotics, is permitted in our supply and we expect all audited farms to comply to these standards.

3. **We do not allow the routine use of antibiotics for prophylactic purposes in our supply chain. Preventative treatment is only allowed where animals are diagnosed at high risk of bacterial disease and must only occur under prescription by a veterinarian on the basis of epidemiological and clinical knowledge, in line with Responsible Use of Medicines in Agriculture Alliance (RUMA).**

Progress:

The TWA standards ban the routine use of antibiotics for prophylactic purposes for meat and shell eggs.

Across the Tesco Sustainable Dairy Group and Tesco Cheese Group selective dry cow therapy was introduced in August 2018 to reduce the routine use of antibiotics as a method of preventing mastitis. Tesco's target is for farms to increase the proportion of cows receiving selective dry cow therapy by at least 10% of the herd per year until all eligible animals are only receiving teat sealant and no antibiotic treatment. Reducing routine antibiotic dry cow therapy is a key area to reducing total antibiotic use in our dairy supply chain and we have seen significant progress in this area in recent years.

It is recognised that production methods may present species specific logistical challenges to prescribing. Therefore selective dry cow therapy, and metaphylaxis (group) treatments are still permissible in key sectors (e.g. broiler chickens). However, the prescription of these treatments remains in line with the overall trend reduction in net usage, which has been recorded over the last 7 years. Similarly, we have reported consistent reductions across our UK, EU and Continental pig supply chains and are approaching zero use of Highest Priority Critically Important Antibiotics in both the pig and poultry sectors.

4. **We measure antibiotic use in our supply chain and have made antibiotic usage records a key feature of our farm audit programme. Visibility of records of any antibiotic usage at Tesco supplying farms is required to enable us to monitor levels of use and to help target reduction strategies.**

Progress:

We continue to embed antibiotic reporting across our supply chains and usage records continue to be an important component of our TWA audit programme. The maturity of reporting varies by sector and by geography. All sectors across our supply base now report usage and we can track and trend usage by species sector, geography, and method of production. This facilitates evaluation of absolute usage and trend changes based on outcome measure data.

Sector-specific reporting can be found in the appendix.

5. **We will implement the UK species specific targets for antibiotic reduction— as defined by RUMA and the Veterinary Medicines Directorate— in our supply chain. Starting in 2018, we have continued to collect sufficient data to establish a baseline. We will ensure that each of our animal sector supply chains have targeted reduction strategies in place in order to meet the specific national target for that species.**

Progress:

The global reduction in antibiotic use in the Tesco supply base either meets or exceeds UK sector equivalents, as reported by the latest Veterinary Antimicrobial Resistance and Sales Surveillance (VARSS), which was published in November 2022.

Since 2021 there has been an increased industry focus on maintaining low usage of antibiotics by understanding the challenges and underlying reasons for their use and exploring the implementation of preventative disease programmes (i.e. through increased vaccination). In line with RUMA targets, the industry emphasis is now on identifying persistent high usage (PHU) within supply chains, working with individual outliers to carry out reductions, and demonstrating where supported engagement has led to reductions at individual supplier level. The ruminant sector has

been presumed to have comparatively low usage but presents limited data to support this. Therefore, in line with RUMA objectives, we are focussing on the continued development of reporting metrics across our sustainable beef and lamb groups – now in their second and third year respectively.

6. **We will help build farmers' capability on antibiotic use and animal health in our supply chain, to help them to reduce use without compromising animal welfare. We will work with our Product Partners, wider suppliers, and other bodies to identify the right educational approaches and the best ways to share this knowledge among farmers.**

Progress:

This is a key area of focus for each Tesco Sustainable Farming Group. All farmers in our Tesco Sustainable Dairy Group report on a range of animal health and welfare measures, including antibiotic use. Benchmarking and vet-facilitated workshops support them to achieve continuous improvement in this area. Pig and poultry supply chains are provided with data visibility and insight at both individual and group level and we have introduced qualitative reporting to understand farm-level health challenges and associated management strategies. All farmers in our Tesco Sustainable Beef Group and Tesco Sustainable Lamb Group report antibiotic usage data annually at the level of individual treatment occasions. This allows us to monitor trends and disseminate valuable insight in those sectors where greater engagement has been identified as an industry priority. Across all sectors, this comparative overview and knowledge sharing has helped inform strategic approaches and been instrumental in the reductions in use seen to date.

7. **We will support Research and Development (R&D) opportunities that will help drive the reduction of on farm antibiotic use. With our Product Partners we are already working with the Government Agri-tech Centres of Innovation to identify R&D opportunities.**

Progress:

We are supporting supplier/manufacturer research trials regarding the application of alternative hatching technology, e.g. Hatch-in-house systems for broilers, which shows early indications of associated improvements in chick welfare and reductions in antibiotic use.

Our Tesco Sustainable Dairy Group R&D committee is focusing on management approaches to help reduce pneumonia in calves, an area where reductions in antibiotic use have proved harder to effect to date.

By evaluating antibiotic use across multiple geographies and methods of production (MOP), we are able to collate and disseminate best practice on-farm management strategies, which are demonstrably associated with low antibiotic usage, while maintaining optimal animal health and welfare.

Appendix.

Data sets are available across Tesco Livestock Supply chains to evidence the quantitative progression against commitments. These vary in terms of maturity of data set but span between 2-6 years depending on sector.

The reporting metric will reflect industry reference values (e.g. VARSS) which are a function of species/production specifics. Hence, where the whole life reporting impacts directly on the product at consumer level (i.e. meat and fish) this is summarised based on total amount of antibiotic administered during lifetime relative to weight of animal mg/kg. However, in the case of milk and eggs the focus is on reporting the number of treatment occasions of the dairy cow/hen.

Unless otherwise stated the figures cover the Tesco reporting year i.e. from March 2021 to February 2022.

Where an equivalent VARSS figure is available, this is included for comparison and 2021-24 RUMA target data is provided for reference. VARSS data reflects the 2021 calendar year.

Poultry

The year-on-year trends for broiler chickens, turkey and duck are illustrated below (Figures 1, 2 and 3). Poultry data applies to 100% of farms supplying Tesco with fresh chicken, turkey, or duck, with figures reported every 4 weeks for all birds processed in the preceding period. The final figure is a weighted average, based on product volumes and declared for each geography and method of production. All Tesco data is presented relative to VARSS equivalent. A logarithmic trendline confirms the interpretation from 2020 i.e. that data sets are approaching a plateau following year-on-year decrease.

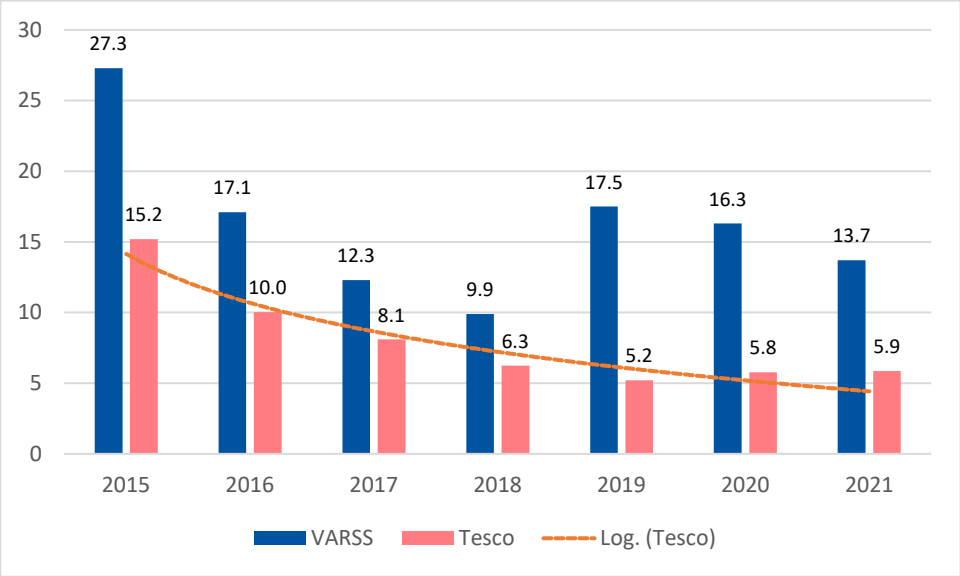


Figure 1. Antibiotic Use (mg/kg) across Tesco Broiler Supply Chains (all) vs reported VARSS Data.

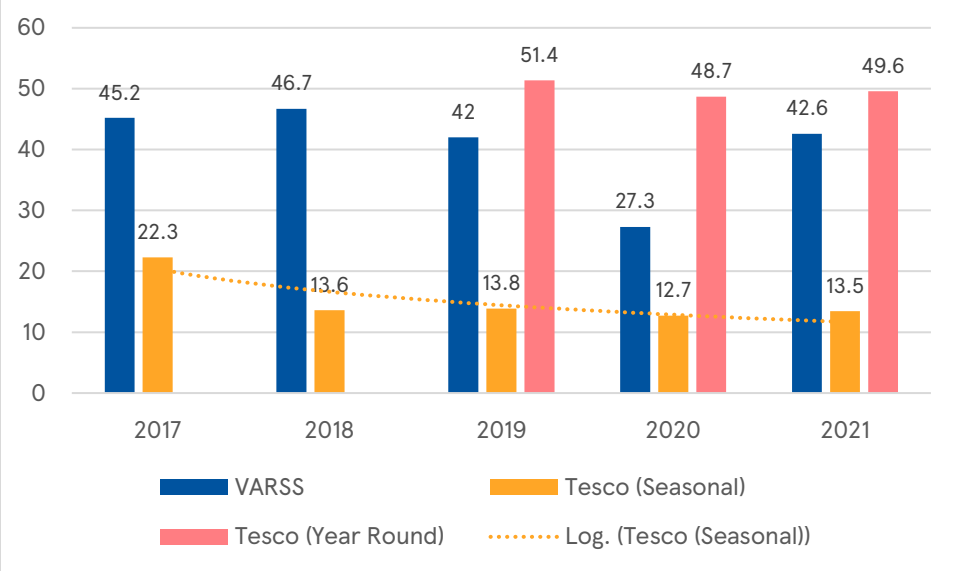


Figure 2. Antibiotic Use (mg/kg) across Tesco Turkey Supply Chain (Seasonal) and Tesco Turkey Supply Chain (Year-Round) vs reported VARSS Data.

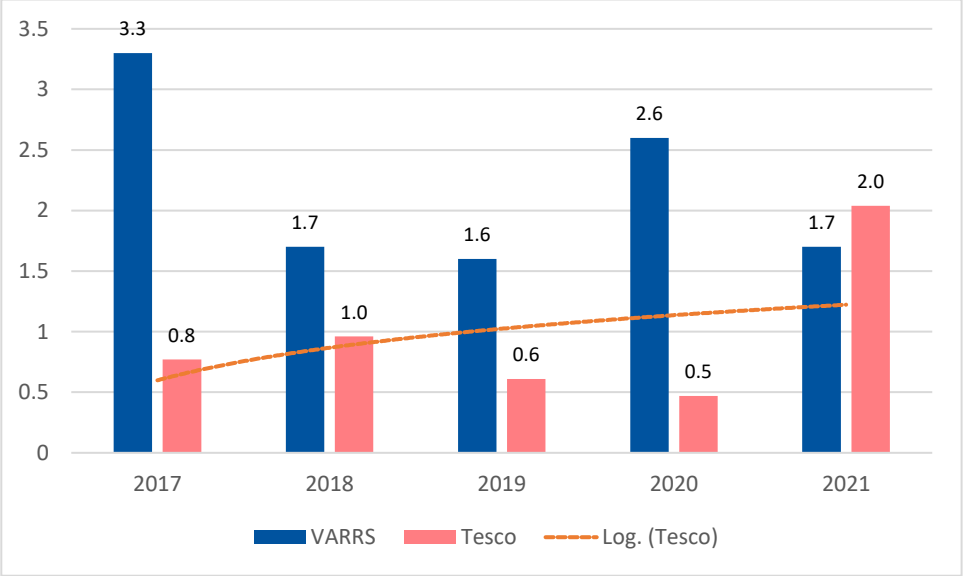


Figure 3. Antibiotic Use (mg/kg) across Tesco Duck Supply vs reported VARSS Data.

Each of the described sectors shows a trend decrease in total antibiotic use. But as expected, after a period of significant reduction, reported figures appear to be plateauing consistent with observations from other industry data sets. Nevertheless, total usage in each sector is lower across the Tesco supply base than the equivalent UK VARSS value.

It must also be acknowledged that issues identified in 2020 continued to pose management challenges throughout 2021 across the poultry sector, both in the UK and EU. Enhanced reporting on qualitative clinical considerations confirmed an increase in flock health challenges that arose, in part, as a consequence of disruptions to normal production flow; many of which occurred as both direct and indirect consequences of COVID 19. Additionally, the expected seasonal respite from Avian Influenza did not materialize and the prolonged housing order presented particular issues for free-range production sites.

When comparing profiles, both Tesco and VARSS data highlight those sectors where reduction presents a challenge (i.e. turkey) and also where usage has been low and comparatively static (i.e. duck). While there has been an uplift in use in the duck sector in 2021, it is still the lowest overall use across the poultry supply base.

The Tesco turkey data sets continue to provide separate visibility of seasonal and All Year Round production (established in 2019). This acknowledges the very different specifics in terms of breed, bird weight and method of production, while the VARSS data aggregates this data. Tesco sub-sets have demonstrated a year-on-year trend decrease. While the Tesco All Year-Round

value for 2020 is marginally higher than the last reported VARSS figure (but still within the RUMA target of 50mg/kg), the seasonal production value is still considerably lower.

In each of the above the use of 3rd and 4th generation cephalosporins antibiotics are prohibited and the default position is that fluoroquinolones must be excluded except where sensitivity testing indicates that no other treatment option is available (in the interests of safeguarding animal welfare). Tesco enforces an industry emphasis on ensuring a robust evidence base for clinical decisions.

Eggs

Egg data applies to 100% of all farms supplying Tesco with shell eggs. Figures are reported every 4 weeks and the final figure is a weighted average based on product volumes and declared for each geography and method of production. Figures continue to be reported in terms of both treatment incidence per 100 bird days equivalent, but this is of less direct comparative value. Tesco now additionally collate data as a mg/kg PCU value based on laying hens having an average lifetime weight of 2kg.

There has been a continued trend reduction in total antibiotic use over the last 3 years (even though treatment occasions have marginally increased). This reflects the change in prescribing policy, namely that colistin and HPCIA use is prohibited and that preferential use of macrolides and aminoglycosides is discouraged.

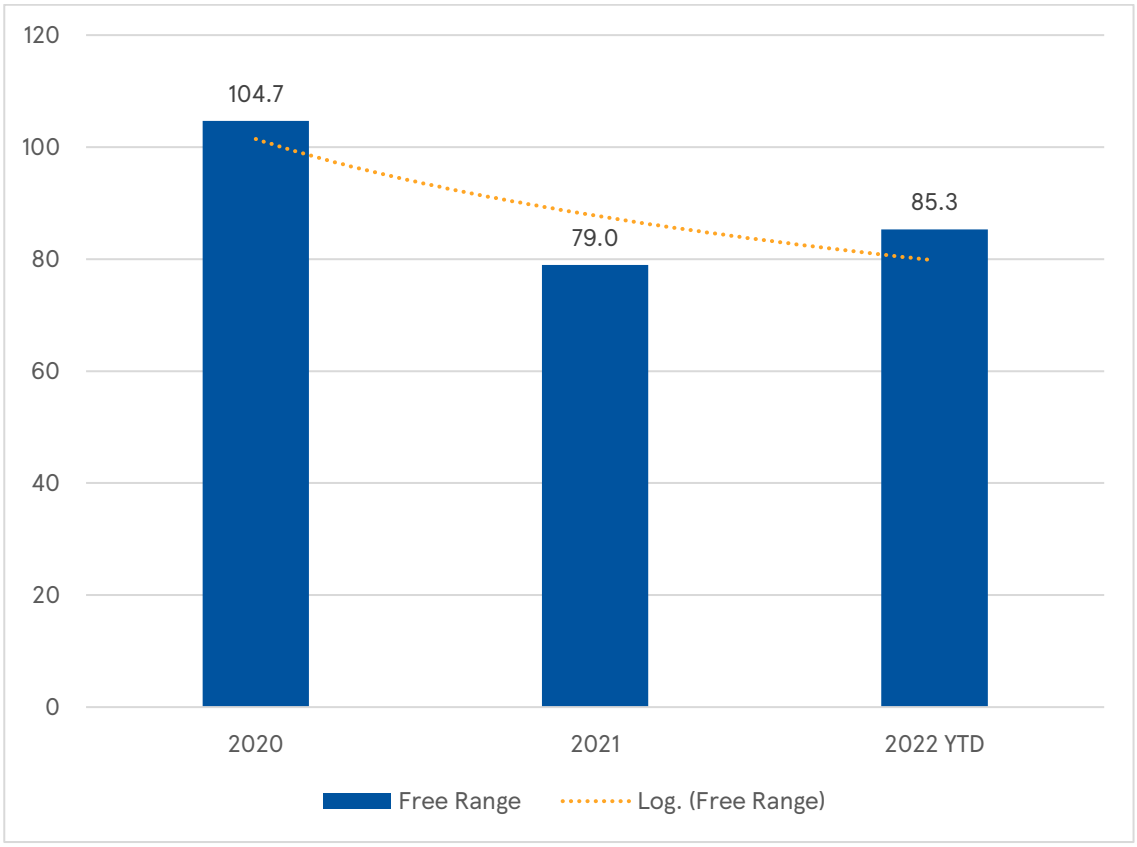


Figure 4. Antibiotic Use in Commercial Layers (mg/Kg PCU) across Egg Supply Base

The use of colistin, fluoroquinolones and 3rd and 4th generation cephalosporins are not permitted in the egg supply base (again with the caveat that quinolones may be used as a treatment of last resort following sensitivity testing). Additionally, there are changes in terms of method of production. Comparatively, enriched colony cage production is associated with lower use and as these flocks come out of production as part of Tesco's commitment to 100% cage free shell eggs by 2025, there is a marginal increase in antibiotic use.

Pigs

Reporting across the pig sector is differentiated in terms of conventional supply (from UK, Netherlands and Denmark) and continental meats (Spain and Italy). Pork figures are calculated on a quarterly basis and the figure is a weighted average derived from nationally reported figures and individual farm data. This again totals 100% of Tesco fresh pork production.

For continental pork the figure is reported every 4 weeks (as per poultry).

All Tesco data is presented relative to VARSS equivalent. A logarithmic trendline illustrates that data sets are approaching a plateau following year-on-year decrease.

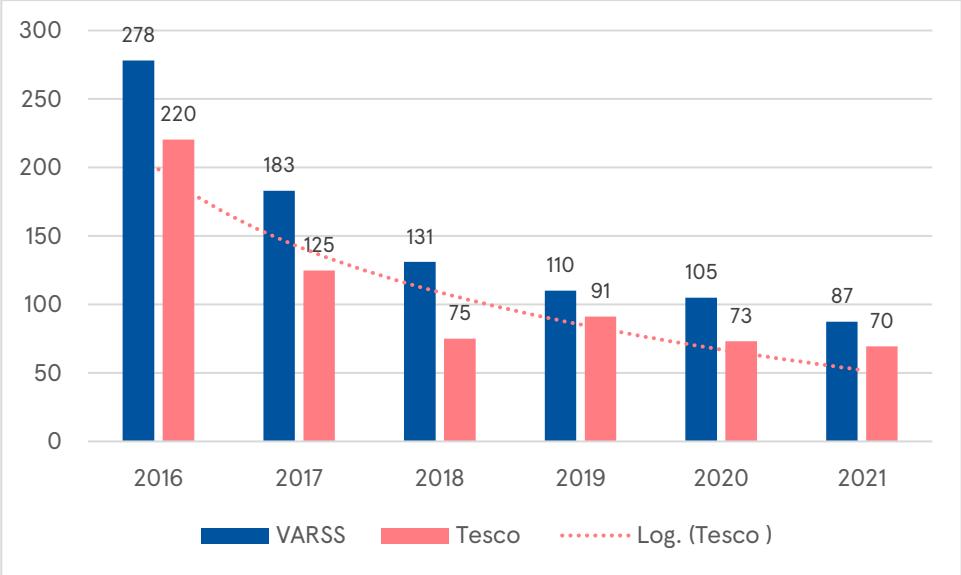


Figure 5. Antibiotic Use (mg/kg) in Pork Supply Base (UK/Denmark/Netherlands) vs reported VARSS Data.

There have been significant reductions across the pig sector (Figure 5) since reporting began. As with the poultry supply chains the data includes submissions from geographies with well-established reporting and reduction strategies (i.e. VetStat in Denmark and MARAN in the Netherlands), which has contributed to the lower initial figure but again means the greatest reductions have already been achieved and focus is now on patterns of therapeutic prescribing.

Encouragingly, despite increases seen in the 2019 reporting year, this appears to have been resolved and a further net reduction demonstrated in 2020 and 2021. With the Tesco supply base reporting figures below the 2021-2021 RUMA target of 70mg/kg.

However, there is an awareness of ongoing disease challenges and the required changes in management approach that need to be implemented to address the EU ban on Zinc Oxide inclusion in pig rations in 2022. Despite this the Tesco supply base still demonstrates a lower usage figure than the UK industry as a whole. Perhaps the most important aspect is that the focus on reducing HPCIA use has been maintained even in the face of disease challenges with negligible use overall and individual suppliers reporting zero use.

It has been acknowledged previously that continental Pork is potentially challenging given that the Spanish and Italian pig sectors remain two of the highest users of antibiotic for any species/geography as illustrated by the last published European Surveillance of Veterinary Antimicrobial Consumption (ESVAC) reference data. There are dedicated Tesco supply chains in Spain and Italy respectively and variances in usage have a proportionally greater net impact due to the smaller farm/pig numbers involved. The net trend in terms of antibiotic use is comparatively stable, although total use has reduced between 2019 and 2020 and it is consistently lower than the UK industry average while HPCIA use also remains low (Figure 6).

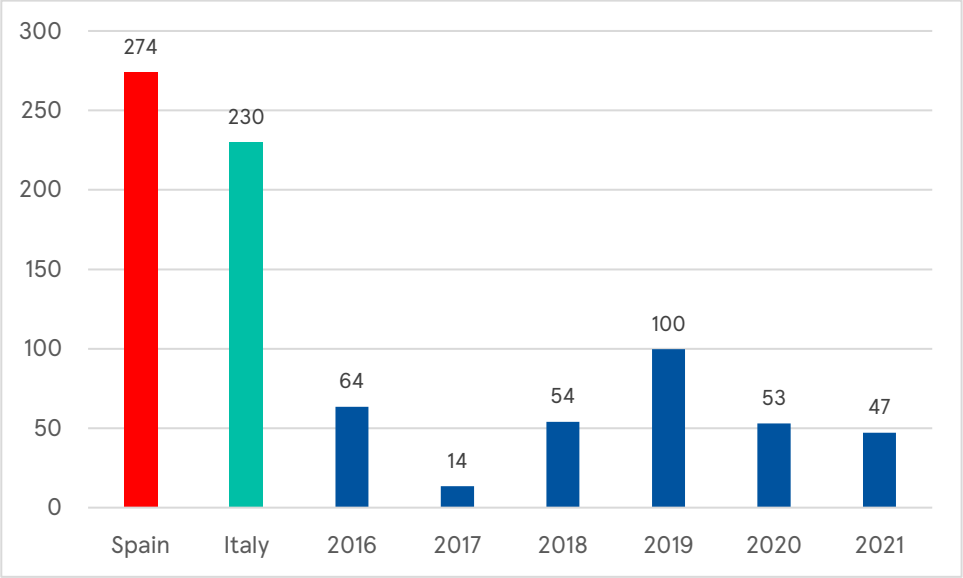


Figure 6. Antibiotic Use (mg/kg) in Tesco Continental Pork Supply (all) vs ESVAC Data

Dairy

The data from the Tesco Sustainable Dairy Group (TSDG) and Sustainable Cheese Group (TCG) continues to demonstrate year-on-year reduction across all key parameters, illustrated relative to most recent data set for the UK herd (Figure 7).

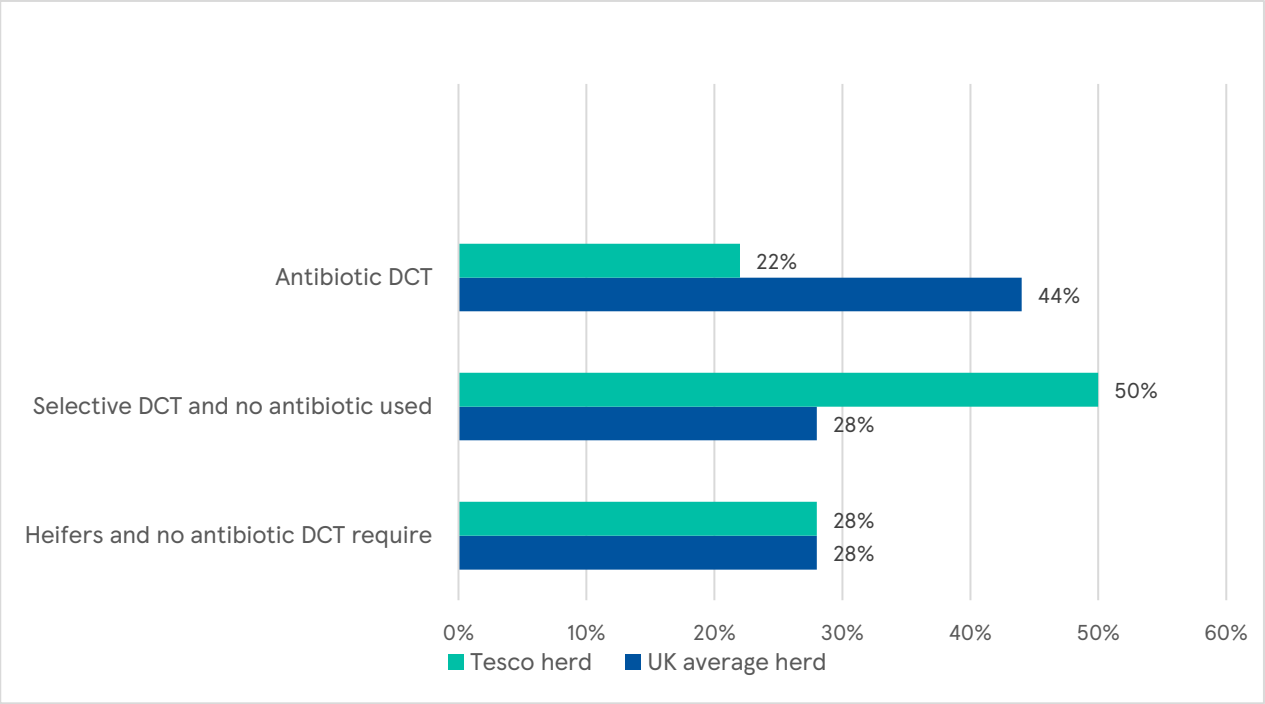
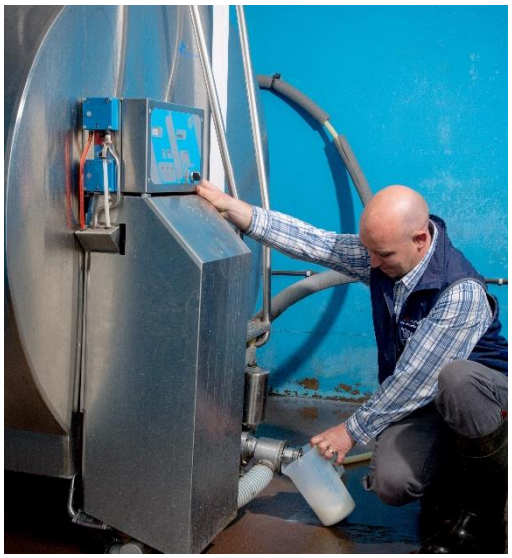


Figure 7. Proportional Antibiotic Use (% Total Treatment Days) for TSDG and TCG Dairy Cows relative to UK Herd Average



The reduction in antibiotic Dry Cow Therapy (DCT) and proportional increase in selective DCT is indicative of management approaches which are reflective of a pro-active (preventative) rather than re-active (treatment) strategy. HPCIA use has declined to nominal levels with only 4 treatment occasions being reported from a total of 254,095 head of cattle.

For the first time Tesco reporting metrics now include CHAWG (Cattle Health & Welfare Group) methodology, allowing direct comparison based on mg/kg PCU (Population Corrected Units) for the reporting year. A total of 376 farms have submitted data onto the AHDB Medicine Hub (Figure 8), which is an industry wide online platform to allow farmers to collate, report and compare antibiotic use at individual farm level.

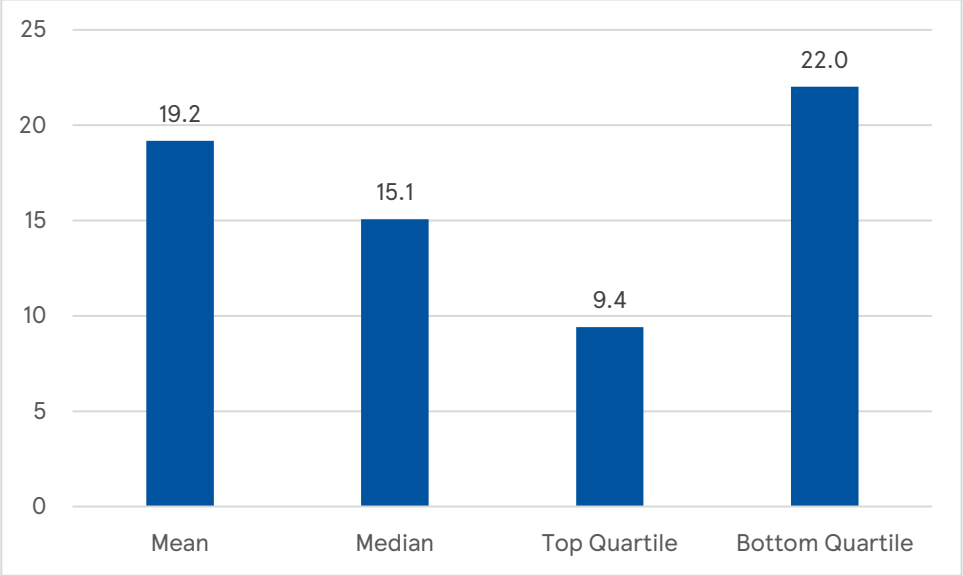


Figure 8. Antibiotic Reporting (mg/kgPCU) in Tesco Sustainable Dairy/Cheese Group

Lamb

Three consecutive annual figures are available from the Tesco Sustainable Lamb Group (TSLG) and represents reporting data between 1st January 2021 to 31st December 2021. This details use across flocks by percentage treatment of neonatal lambs, total antibiotic use (mg/kg PCU) and percentage use of each therapeutic class (Figures 9, 10 & 11).

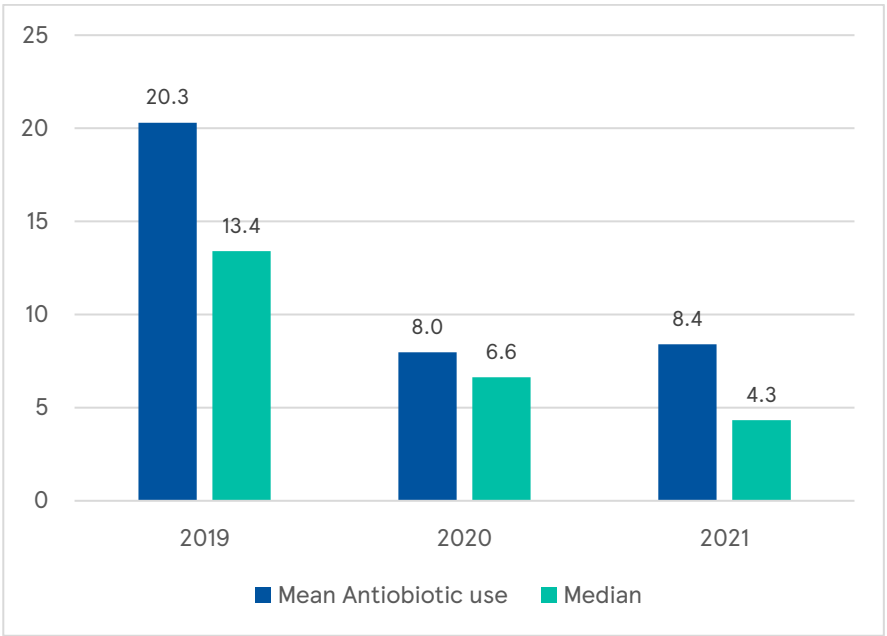


Figure 9. Antibiotic Reporting (mg/kg PCU) in Tesco Sustainable Lamb Group

The reporting methodology was amended between the collation of the 2019 and 2020 data sets; moving from a calculation based on antibiotic purchase figures to actual administration figures. It is possible that a proportion of the total reduction between 2019 and 2020 is an artefact of this change (Figure 9). While there has been an increase in total mean use between 2020 and 2021, median use has decreased; reflecting impact of a minority (5) outliers reporting significantly higher usage figures (>50mg/kg PCU).

There has been a non-significant increase in total neonatal treatment occasions between 2020 and 2021 (but still appreciably lower than 2019) and this increase in treatment occasions has driven by a slight increase in overall use of injectables, while use of oral treatments has remained unchanged. The single biggest clinical treatment reason remains 'watery mouth'.

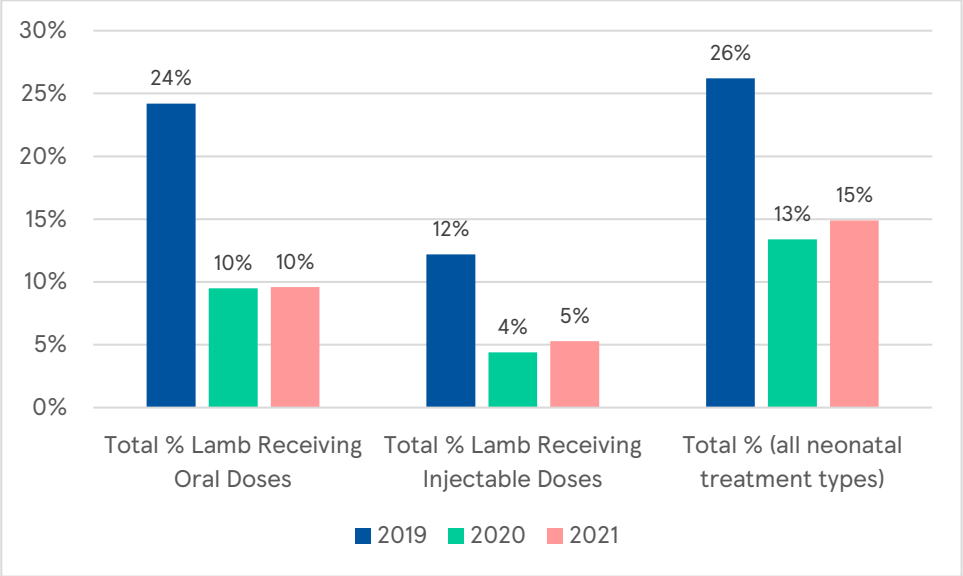


Figure 10. Mean Antibiotic Use (% Total Treatment Days) for Neonatal Lambs

VARSS have not reported on usage in the sheep sector to date. In due course comparative data will be made available from the electronic medicines hub (eMH), as a first stage in creating a standardised, centralised reporting mechanism across the ruminant sectors. However, Medicine Hub have stated that they will not be publishing antibiotic use figures until the dataset has been grown sufficiently to be reflective of the industry as a whole.

Tetracylines and penicillins make up a majority of treatment events; with a significant trend change to greater use of penicillins in the last reporting period. The total use of HPCIA, colistin and sulphonamides is zero. Year-on-year changes in therapeutic prescribing patterns relate to relative use of macrolides and amino glycosides. Macrolide use has shown a reduction with an associated increase in aminoglycoside and penicillin use. This is tentatively considered a positive trend given the focus (particularly with respect to macrolides) on those therapeutic classes considered important in terms of human health, while not being classed as HPCIA.

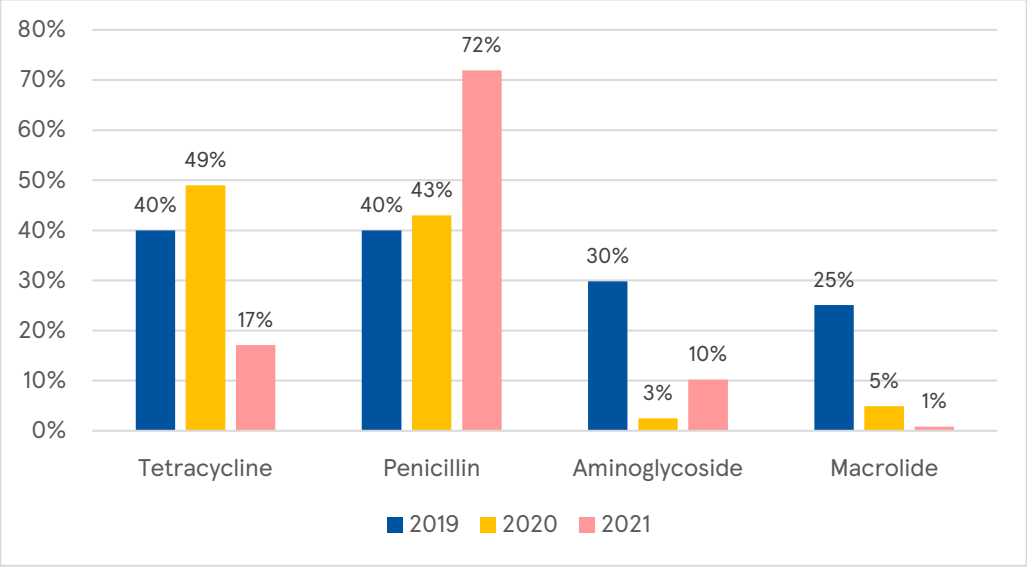


Figure 11. Mean Antibiotic Use in Tesco Sustainable Lamb Group (% Total Treatment) by Antibiotic Clas

Beef

For the second year Tesco has collated reporting figures for the Tesco Sustainable Beef Group (Figure 12) with reporting data between 1st January 2021 to 31st December 2021 from 917. The metric used is consistent with CHAWG methodology and compatible with the AHDB Medicines Hub reporting.

At present, the data set can only be considered in isolation as there is no directly comparable industry figure. However, averages and distribution are quite consistent with TSLG data set, suggesting that ruminant usage in general may be similar across extensively farmed species in respect of both total amounts (mg/kg PCU) and HPCIA. Additionally, TSBG producers report very low usage of HPCIA, aminoglycosides and macrolides with the majority treatment types being tetracycline and penicillin products (Figure 13).

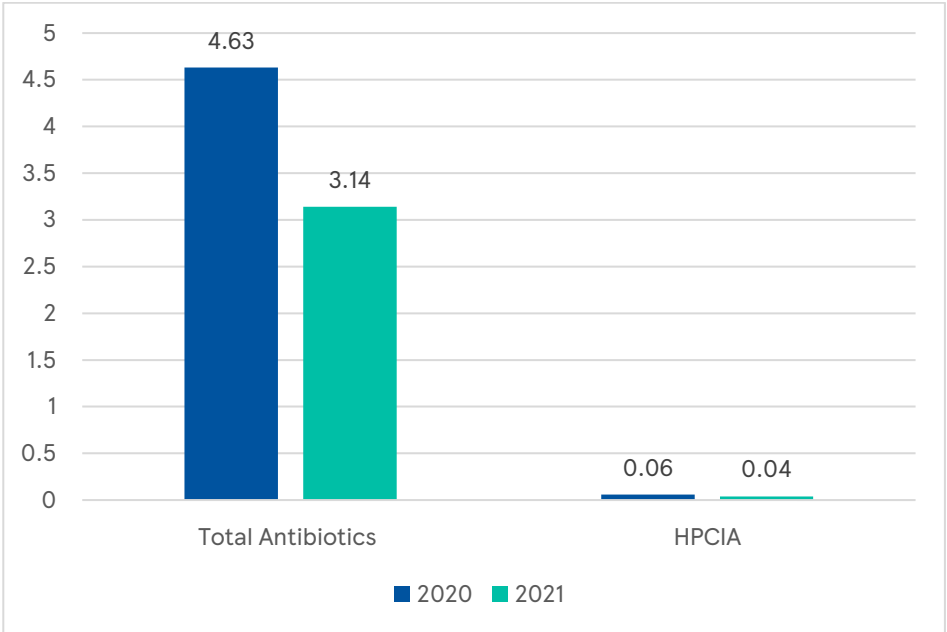


Figure 12. Mean Antibiotic Use (mg/kg PCU) for Tesco Sustainable Beef Group

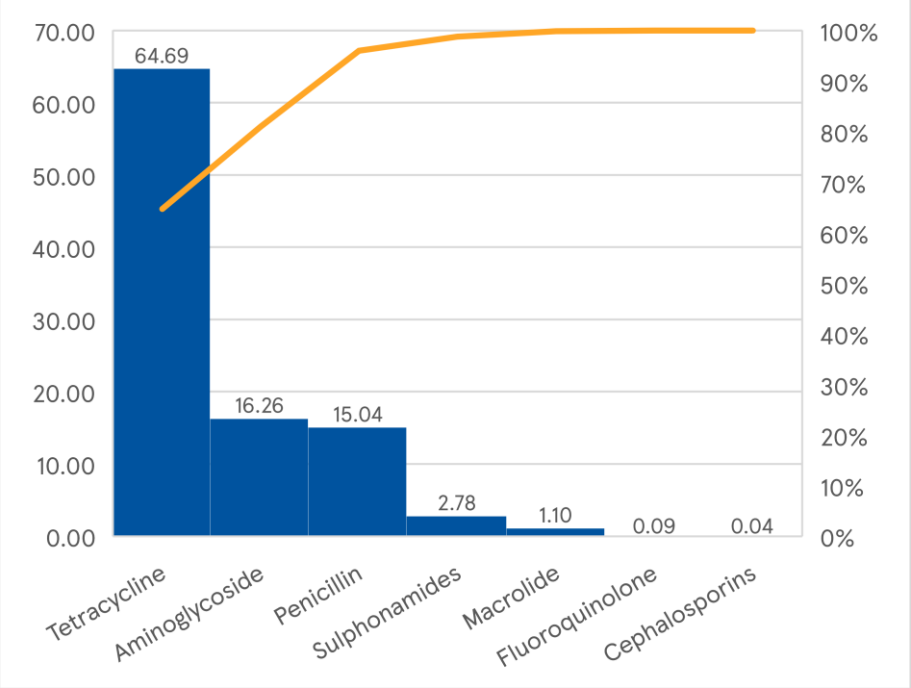


Figure 13. Mean Antibiotic Use (mg/kg PCU) in Tesco Sustainable Beef Group (% Total Treatment) by Antibiotic Class

Consistent with both Tesco Antibiotic Commitments and RUMA targets, reporting within the TSLG and TSBG supply chains has also captured extensive data on preventative health programmes, with the majority of producers implementing an integrated strategy comprised of 2 or more different management approaches. A particular focus has been on endoparasite control because of increasing concerns about the potential for cross-resistance and so integrated approaches using multiple strategies are encouraged (Figure 13). While TSLG producers are arguably more advanced in this respect, it is encouraging to see the range of approaches being adopted by both groups.

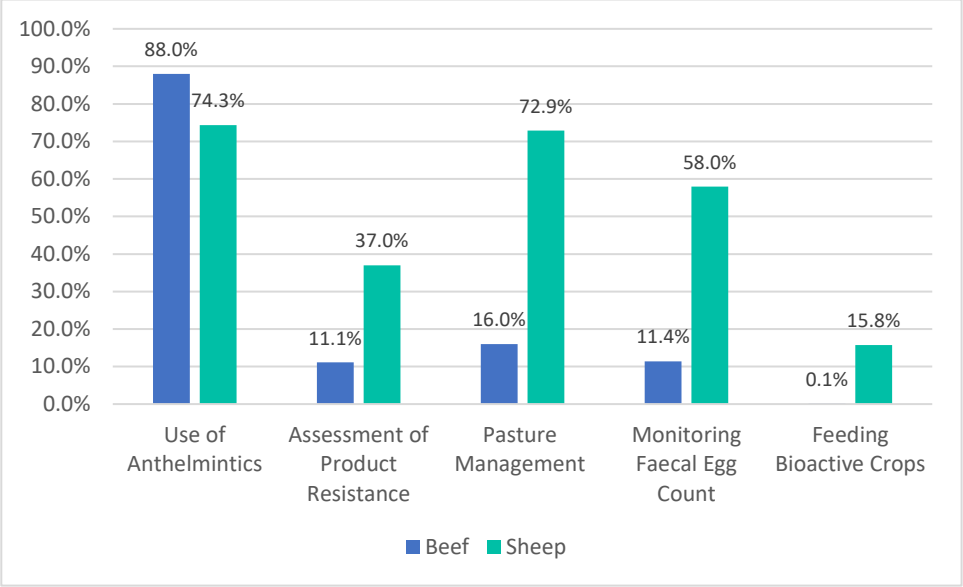


Figure 14: Comparative Approaches to Endoparasite Control

A reported consumer presumption is that productivity and cost effectiveness are key behavioural drivers underpinning preventative health approaches, but this is not evident from the TSLG/TSBG data set. Antibiotic reduction and animal welfare considerations were the principal reasons, and this suggests a good level of producer awareness around One Health-One Welfare. Factors which can help drive producer engagement have been explored further in a recent publication based on this data[1].

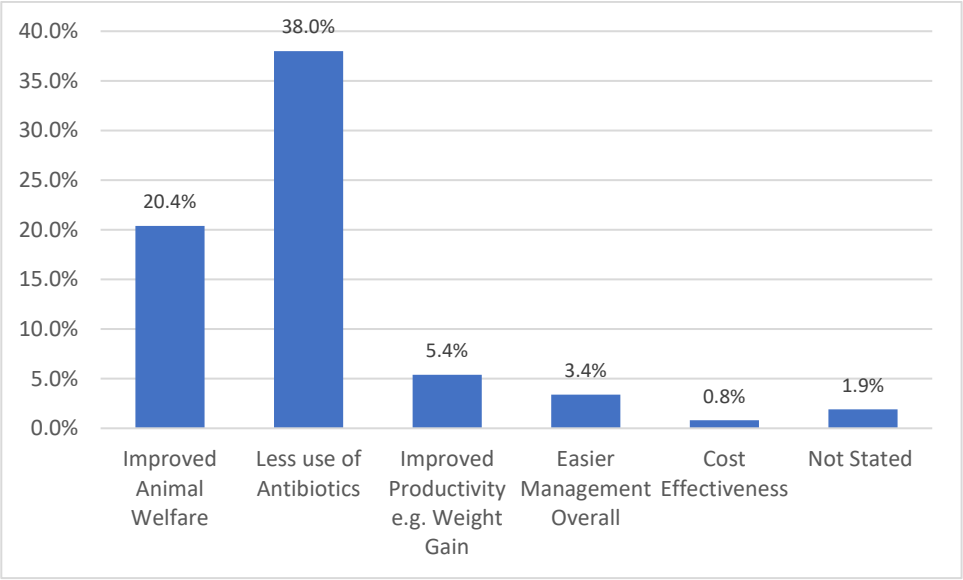


Figure 15: Producer Motivation for Implementing Preventative Health Strategies

Salmonids

Reporting across Tesco salmonid species (trout and salmon) is by production year class. The overall usage pattern is consistent with published VARSS data sets, i.e. use is lower in trout production compared to salmon, and Tesco usage figures are lower than VARSS data (Figure 15).

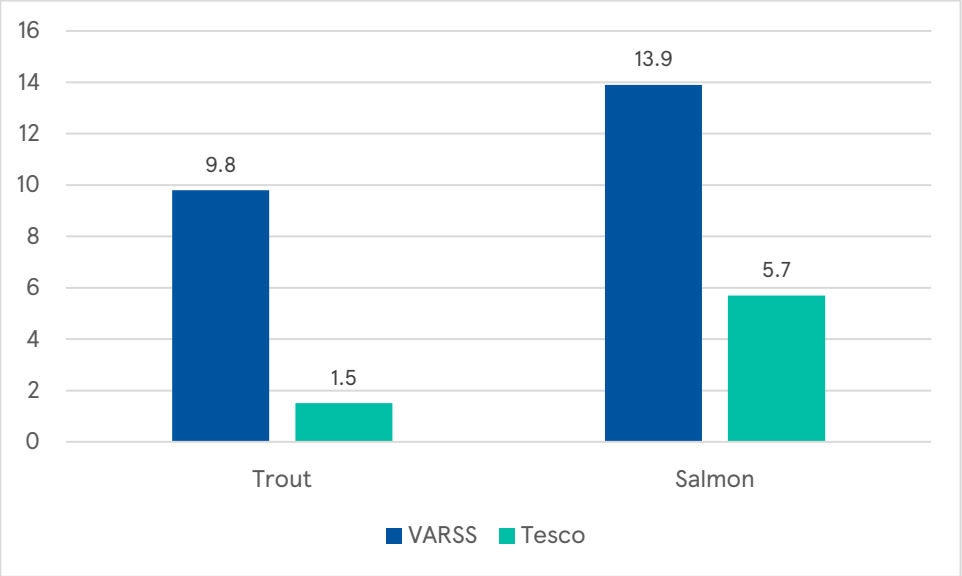


Figure 15. Antibiotic Use (mg/kg) in Salmonid Species

There has been no reported antibiotic use across bass/bream or shrimp supply chains.

[1] Exploring the motivation of a UK Retail Beef Sustainable Farming Group to implement preventative health and welfare strategies (2022). Powell, M., Roberts, F.G and Atkins, T. (In press)