

THE HUMAN LEAGUE 
UNITED KINGDOM

INVESTIGATIVE REPORT

white striping disease in supermarket chicken

EXECUTIVE SUMMARY

Standard factory-farmed chickens are bred to grow at an extreme pace, and live in cramped, often dirty conditions. **WHITE STRIPING IS A MUSCLE DISEASE THAT IS REPORTED TO IMPACT 50 - 90% OF FAST-GROWING CHICKENS, AND IS A CONSEQUENCE OF FAST GROWTH RATES.** It is one of the many diseases chickens suffer due to their genetics, and results from breast muscle growing so fast that instead of developing normal muscle tissue, fat cells are formed, which appear as white stripes on the breast meat. This changes the appearance, texture and, crucially, reduces the nutritional value of the meat by increasing the fat content.

The Humane League UK set out to investigate whether the 'standard' chicken fillets on British supermarket shelves had similar levels of white striping disease to those reported in scientific journals.

Our findings revealed:

- **85% OF PACKETS EXAMINED HAD ONE BREAST FILLET OR MORE AFFECTED BY WHITE STRIPING.**
In fact, some supermarkets had white striping in over 90% of the standard packets sampled.
- **IN COMPARISON, JUST 11% OF HIGHER WELFARE PACKETS OF CHICKEN PRESENTED THE DISEASE.**
- **ALL EIGHT SUPERMARKETS HAD WHITE STRIPING DISEASE PRESENT** in their standard own-brand chicken breast fillets.
- **THE WORST OFFENDERS WERE ASDA, ALDI AND LIDL**, with white striping present in 94%, 92%, and 92% of their standard own-brand chicken respectively.

INTRODUCTION

Chicken meat, particularly breast meat, is often acclaimed as a healthy option for those wanting high protein with little fat. However, producers have sought greater profits by growing chickens quicker and quicker, and the composition of the meat on our shelves today has now changed.

In the UK, over one billion chickens are slaughtered for meat every year, and 90% of them are reared on intensive farms. These birds suffer every day as a consequence of the conditions they are forced to live in, and in particular due to their genetic make-up. Chickens now achieve a 400% increase in growth rate and achieve market weight in 60% less time than broilers 50 years ago. With breast meat being so popular, birds have been selectively bred for bigger breast muscle, which has now increased in size by two-thirds of a traditional chicken¹. Their incredible growth rate means that they are slaughtered at just 33 - 42 days of age. The most widely used breed in Europe is the *Ross* (typically *Ross308* or *Ross708*), which accounts for at least 70% of all broilers slaughtered in the EU, while *Hubbard* and *Cobb* breeds are less widely used². Achieving the best feed conversion rate for premium cuts of breast meat is the economic driver for the modern broiler industry. And, while supermarkets may claim that they are providing the best product to consumers at low prices, it comes at a cost to the birds and our health.

White striping disease is a muscle myopathy that is reported to be found in 50 - 90%³⁻⁷ of chicken breasts. Studies have shown a correlation between the presence of white striping and

increased growth rate, slaughter weight, and high breast meat yield^{6,8,9}. The disease is a consequence of fat cells taking the place of protein cells. The fat cells are visible as white striations running parallel to the muscle fibres, predominantly seen on the surface of breast fillets; white striping can also appear on tenders and some thigh muscles¹⁰. The selection for fast growth and increased breast size has profoundly altered muscle architecture and metabolism. White striping can appear in varying degrees, and is not only a visual representation of the welfare issues the chicken suffered as a consequence of fast growth but also impacts the quality of the products.

White striping disease is a muscle myopathy that is reported to be found in 50-90%³⁻⁷ of chicken breasts.

The nutritional value of the chicken meat reduces when white striping is present, with higher intramuscular fat content and an increase in the collagen to total protein ratio⁹. Studies found a 224% fat content increase, a 9% protein decrease, and a 10% collagen increase when comparing normal breast muscle with those severely affected by white striping, such as a score 3 (see methodology on scoring system)¹¹. Fat calories are also impacted increasing from 7% to 21% and there is a deficiency of some essential amino acids¹¹.

White-striped meat has a softer texture and lower water-holding/binding capacity than normal meat. During cooking it influences the ability of the meat to pick up any marinade and the meat retains less moisture¹². Overall, white striping means lower quality meat.

Step into any of the major supermarkets and you will see the shelves stacked with factory-farmed chicken. Now, it is apparent just how prevalent white striping disease is on the chicken fillets piled on our shelves. We conducted an investigation across all the major UK supermarkets—Tesco, Sainsbury's, Asda, Morrisons, Co-op Food, Aldi, Lidl and Iceland—to measure the level of chickens suffering from white striping disease and the results show that all the supermarkets are selling chicken with white striping.



METHODOLOGY

In order to examine how prevalent white striping disease is in the chicken fillets purchased daily in the UK, we conducted a study of chicken breast fillet packets across 8 of the top 10 major supermarkets by revenue, excluding two supermarkets with commitments to shifting to higher welfare chicken: Waitrose and Marks & Spencer.

In total, 19 cities and towns were covered spanning as north as Edinburgh and as south as Cornwall. Volunteers and staff who conducted the study chose the location of supermarkets based on their most local stores. This gave a varied spread around the country. At each supermarket location, we assessed both their own-brand and higher welfare brand of chicken (either RSPCA Assured higher welfare indoors, free-range or organic, though no RSPCA Assured higher welfare indoor was available). As many standard own-brand fresh breast fillet packets and own brand higher welfare packets as available were inspected and photographed, up to 25. However, it was often not possible to inspect that many higher welfare packets as there were either none or minimal available on the shelves. Some supermarkets also didn't have enough standard own-brand chicken on the shelves to examine 25 samples. Through this method we examined between 100 - 213 standard own-brand packets and between 0 - 55 packets of higher welfare own-brand for each retailer.

Data collection ran over two time periods: February 2020 and July - August 2020 (this interlude between the two periods was due to COVID-19

restrictions). Extreme care and precautions were taken when handling and photographing the samples, including using hand sanitiser and face coverings.

In February chicken breast fillets were scored in stores and photographs were used to check all scores. Due to COVID restrictions only photographs were used to score samples in July/August assessment. Each packet was examined to see if any of the chicken breast fillets had white striping present and the score was noted for that packet based on the highest level of white striping present. Some packets may have had two chicken breasts while others had 4 or even 6 - 8. We examined packets rather than individual breast fillets as this is what consumers are buying; they aren't able to split the breast fillets out of the packet before purchase. The photos in *Figure 1* were used as a guide for scoring. We followed the premise that score 0 = no white stripes visible on the breast muscle; score 1 = white striping present but the stripes are very fine and may not cover the breast muscle; score 2 = white striping obviously present and slightly thicker covering the breast; score 3 = easily detectable white stripes with some thicker bands. Where packets had too much condensation to examine properly they were noted as unknown.

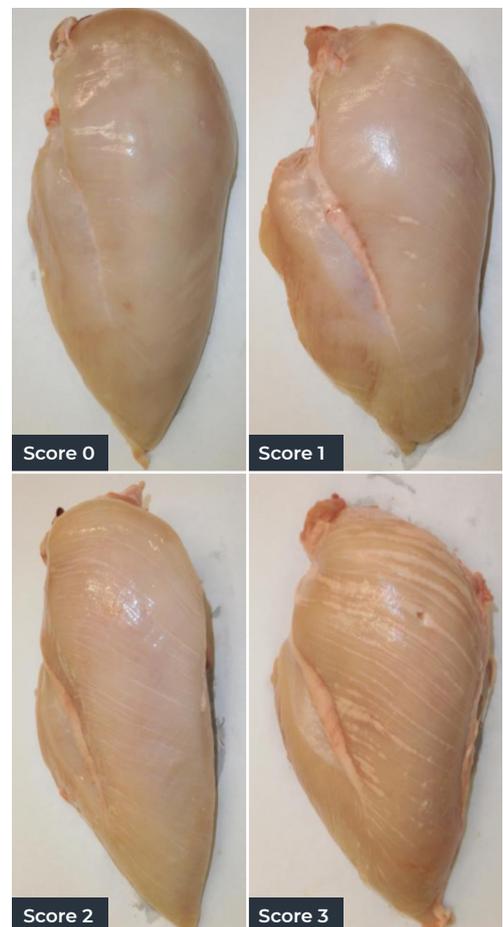


FIGURE 1. Breast fillets displaying different degrees of white striping. Score 0 indicates no white striping and score 3 indicates severe white striping¹³.

RESULTS

Below are the results tables for each supermarket comparing the percentage of standard and higher welfare brand packets with different white striping scores. Percentages are rounded to whole numbers.

WHITE STRIPING SCORE

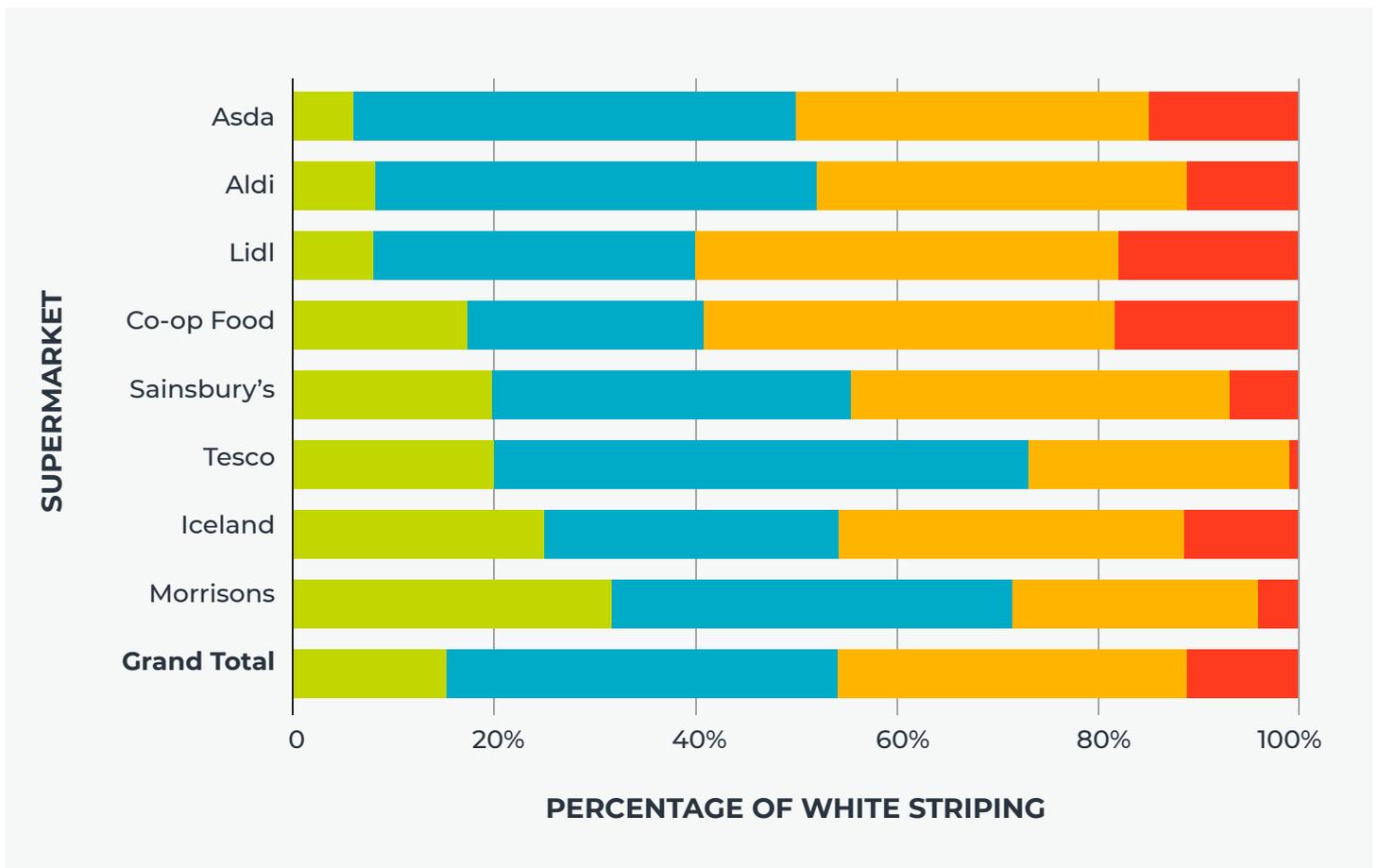


CHART 1: The prevalence of white striping disease in packets of breast fillets from standard own-brand chicken. See Appendix for individual supermarket scores.

WHITE STRIPING SCORE

● 0 ● 1 ● 2

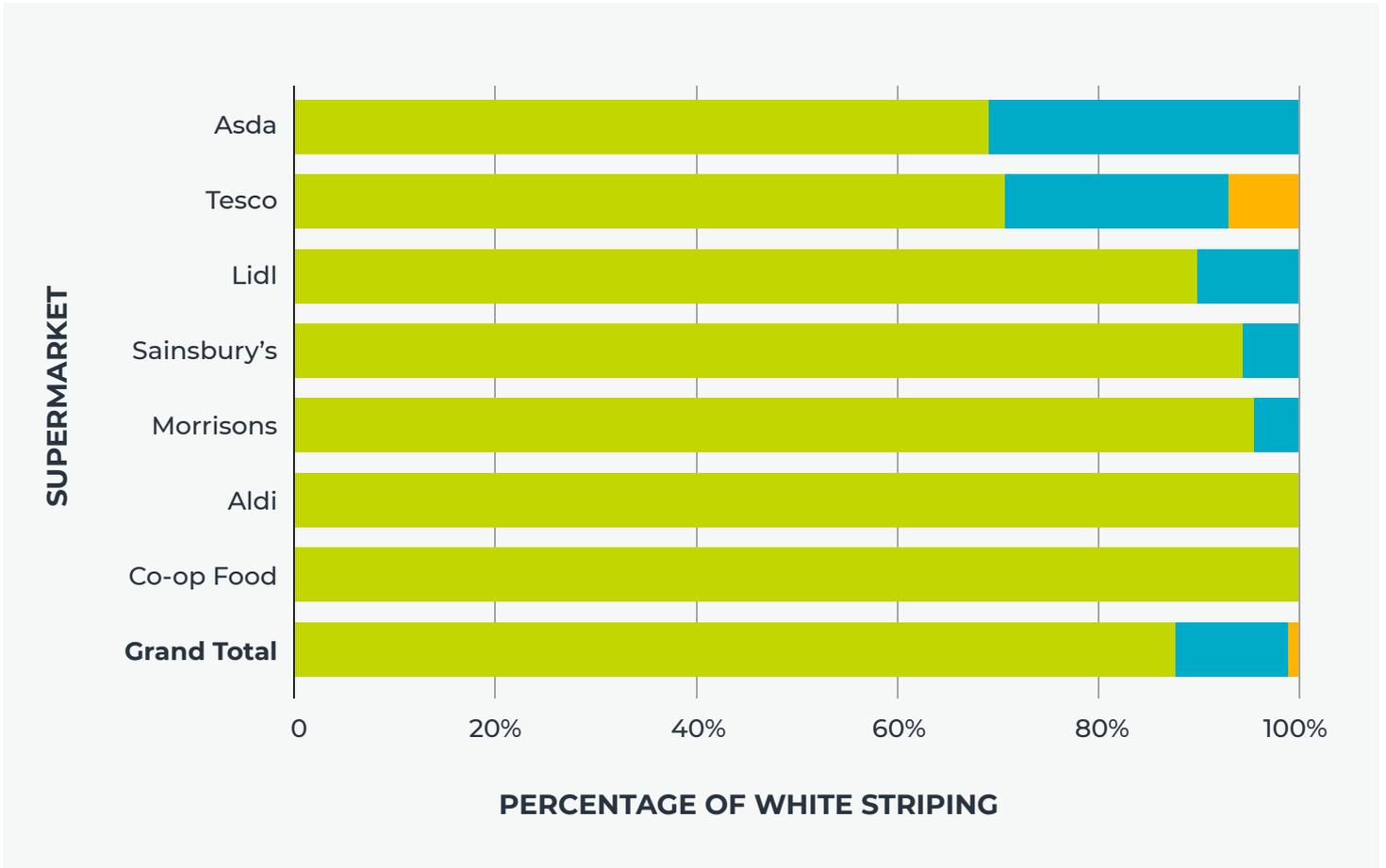


CHART 2: The prevalence of white striping disease in packets of breast fillets from higher welfare chicken (there was no score 3 for any packet examined). *See Appendix for individual supermarket scores.*

EXAMPLES OF WHITE STRIPING

SCORE 0

These higher welfare free-range chicken breasts are free from any white striping and appear pink and fleshy. It is also evident when compared with other chicken fillets that they are slightly smaller, indicating that they are not from a fast-growing breed (and they are RSPCA Assured, which confirms it).



SCORE 1

These chicken fillets have clear fine lines running across the breast muscle. Tesco had the highest percentage of packets with score 1.



SCORE 2

Here it is clear that there are many easily visible white striping lines running along the breast. Lidl had a high proportion of chicken breasts scoring 2.



SCORE 3

On this fillet there many thick white stripes on the breast. Asda performed as one of the worst supermarkets for white striping.



DISCUSSION

All the supermarkets had white striping present in own-brand packets of chicken fillets, with all having some with white striping score 3 present. In our sample, Asda, Aldi, and Lidl had the highest levels of white striping present. Co-op Food, Lidl, and Asda had the worst percentage of score 3 white striping. In all the supermarkets except Morrisons, only a quarter or less of the standard packets examined had no white striping present. In comparison, for the higher welfare brands sampled, in all the supermarkets over two-thirds of the assessed packets had no white striping. There was little difference between the results from the first sample period in February and the second in July - August.

Due to the size of the breast muscle in the packets it's clear that fast-growing chicken breeds were used in all the standard chicken brands on the shelves.

The comparison of results between the higher welfare brands and the factory-farmed chicken was remarkable. In total, 85% of standard packets had at least one breast fillet affected by white striping in comparison to just 11% in higher welfare packets. These results corroborate recent studies showing that 50 - 90% of breast fillets are affected by white striping and that there is a correlation between growth rates and the presence of white striping³⁻⁷.

There is a correlation between growth rates and the presence of white striping.

Higher welfare breeds of chicken grow slightly slower and therefore their breast muscle is less impacted by white striping disease. While the prevalence was much lower in the higher welfare branded chicken it still was not completely eliminated. This could be a consequence of a number of things. It is possible that supermarkets are using fast-growing breeds in free-range systems, but making them grow over a longer period, or that breeds with intermediate growth rate still may be too fast in some

cases. Nevertheless, the higher welfare brands featured in our study were rarely affected by white striping regardless of the cause in the intermediate and slower-growing chicken.

The Better Chicken Commitment (BCC) is a criteria for improving the lives of chickens raised for meat. They include changing to a higher welfare breed, providing more space (maximum stocking density 30kg/m²), enrichment, natural light, controlled atmospheric stunning, and third-party auditing. These criteria were agreed by 30 leading animal protection organisations including the RSPCA, Compassion in World Farming, World Animal Protection and The Humane League UK. Since being launched in

THE RESULTS HIGHLIGHT SEVERAL KEY ELEMENTS:

- All eight supermarkets had white striping disease present in their standard own brand chicken fillet breasts.
- In total, 85% of own-brand packets showed one or more breast fillets with white striping.
- The highest score, level 3, was present in all the supermarket chains' own-brand chicken and accounted for 1 in 10 of all packets examined.
- The worst offenders were Asda, Aldi and Lidl, with scores of white striping present in 94%, 92%, and 92% of their standard own-brand chicken respectively.
- All but chicken fillets from Iceland originated from chickens reared in the UK. There appears to be little difference in white striping levels from chickens reared in the UK and those from Poland.
- White striping was only present in 11% of the higher welfare chicken fillet packets we checked.



2018 over 150 companies in the UK and the EU including supermarkets Waitrose, Marks & Spencer, Aldi in France and Carrefour have signed up to the BCC. In the food service industry, over half of the UK's top 40 leading companies are now committed to meeting the BCC criteria. Most recently, well-known chicken brands KFC and Nando's as well as Greggs have all committed to the BCC.

When consumers were asked if they are willing to pay for increased animal welfare, 94% said protecting the welfare of farm animals is important

Price is often cited by supermarket chains as one of the main reasons for the bargain brands, but when consumers were asked if they are willing to pay for increased animal welfare, 94% said protecting the welfare of farm animals is important, and 59% of all European citizens are willing to pay 5% more for animal-friendly products¹⁴. A recent report by World Animal Protection showed that shifting from a factory farm to a higher welfare indoor farm increases production costs by only 0.6 - 0.9 Euro cents per kilo of chicken across the five markets studied. This means a cost increase of only 6.4 - 13.4% above

conventional production costs. Supermarkets often claim that they want to give consumers choice but as we found there was infrequently any choice of anything but factory-farmed chicken.

And it's not just the chickens whose quality of life will improve with higher welfare breeds and more space. Chicken farmers are reported to prefer rearing BCC chickens over conventional breeds. There is lower mortality and they like seeing the birds more active.

Gloucestershire broiler producer Charles Bourns, who grows for Hook2Sisters, was quoted in Poultry News saying "*Standard birds eat, eat, eat, grow, grow, grow, but these birds rush around and by [...] 18 days they are on bails and perches, building their frame and building strength.*" And broiler producer Simon Barton, who grows for Hook2Sisters and sits on the NFU Poultry Board has said "*I like growing these birds,*" with a senior manager at Hook2Sisters agreeing that "*for the farmers that have grown this chicken, they wouldn't want to go back*"¹⁵.

Adding windows to sheds (which is now part of Red Tractor requirements) became the norm for British farms because it was good not just for the animals but the producers. These improved conditions should become the norm for chickens in this decade. Not only will the birds have better welfare but producers will have more work satisfaction and consumers will have a healthier, better quality product.

Finally, there is the issue of the nation's health on a great scale. For years, millions upon millions of chickens have been given antibiotics. Every time any animal is given an antibiotic there is a risk of producing some resistant bacteria. The risk increases further if the animal is not actually sick at the time. Producers don't pick out the sick birds unless it is to cull them. Instead, they treat the whole flock, with tens of thousands of birds in a single shed under medication, all increasing the risk of antibiotic resistance. In the Netherlands, producers that switched to higher welfare breeds a couple of years ago, and they are now finding they use two-thirds less antibiotics¹⁶.

CONCLUSION

The results are in stark contrast to the 'healthy chicken' that supermarkets and the chicken industry promote. The difference between standard intensive and higher welfare brands clearly indicates that the genetic selection of chickens has gone too far and created a chicken that could rightly be called, given their changed morphology, a 'Frankenchicken'.

**85% of the packets of chicken
on the shelves were found to
be affected [by white striping].**

White striping disease is now so prevalent that 85% of the packets of chicken on the shelves were found to be affected in our investigation. These findings should be a wake-up call to the chicken industry that has consistently denied that fast growth impacts the quality of the meat. Not only are birds suffering due to fast growth but now it is evident on every supermarket shelf that the quality of meat has suffered too. Waitrose and Marks & Spencer have already signed up to the Better Chicken Commitment along with other major food companies like KFC, Nando's and Sodexo. If supermarkets are serious about providing truly nutritious food for customers they need to commit today to improve the welfare of their chickens by signing up to the Better Chicken Commitment and improving the quality of the food they provide.

APPENDIX

ALDI

STANDARD OWN-BRANDS

Ashfield Farm, Nature's Glen

HIGHER WELFARE OWN-BRANDS

Specially Selected

COUNTRY OF ORIGIN

UK

LOCATIONS

Brighton, Coulsdon, Hartlepool, Ilford, Isle of Wight,
London, Edinburgh, Romford, Rugby, Sheffield, Truro



SYSTEM OF REARING	SCORING OF WHITE STRIPING					TOTAL NUMBER
	0	1	2	3	Unknown	
STANDARD OWN-BRAND	8%	43%	36%	11%	1%	213
HIGHER WELFARE OWN-BRAND	35%	-	-	-	65%	17

Notes: Minimal higher welfare own-brand chicken available.

ASDA

STANDARD OWN-BRANDS

Butcher's Selection, Farm Stores

HIGHER WELFARE OWN-BRANDS

Butcher's Selection Organic

COUNTRY OF ORIGIN

UK



LOCATIONS

Brighton & Hove, Cambridge, Hartlepool, London, Edinburgh, Sutton, Trowbridge, Walthamstow

SYSTEM OF REARING	SCORING OF WHITE STRIPING					TOTAL NUMBER
	0	1	2	3	Unknown	
STANDARD OWN-BRAND	6%	44%	35%	15%	1%	200
HIGHER WELFARE OWN-BRAND	69%	31%	-	-	-	13

Notes: Minimal higher welfare own-brand chicken available.

CO-OP FOOD

STANDARD OWN-BRANDS

CO-OP British

HIGHER WELFARE OWN-BRANDS

CO-OP British Free-range

COUNTRY OF ORIGIN

UK

LOCATIONS

Bristol, Brighton & Hove, Isle of Wight,
Ormskirk, Redruth



SYSTEM OF REARING	SCORING OF WHITE STRIPING					TOTAL NUMBER
	0	1	2	3	Unknown	
STANDARD OWN-BRAND	17%	23%	40%	18%	3%	101
HIGHER WELFARE OWN-BRAND	100%	-	-	-	-	6

Notes: Very little availability of higher welfare brands.

ICELAND

STANDARD OWN-BRANDS

The Butcher's Market, Class A Fresh

HIGHER WELFARE OWN-BRANDS

N/A

COUNTRY OF ORIGIN

Poland



LOCATIONS

Hartlepool, Isle of Wight, Redruth, Rugby, Truro

SYSTEM OF REARING	SCORING OF WHITE STRIPING					TOTAL NUMBER
	0	1	2	3	Unknown	
STANDARD OWN-BRAND	24%	28%	33%	11%	4%	100
HIGHER WELFARE OWN-BRAND	-	-	-	-	-	0

Notes: No higher welfare brands available.

LIDL

STANDARD OWN-BRANDS

Birchwood

HIGHER WELFARE OWN-BRANDS

Birchwood Free-Range

COUNTRY OF ORIGIN

UK

LOCATIONS

Hartlepool, London, Ormskirk, Redruth, Sheffield,
Edinburgh, Trowbridge, Walthamstow



SYSTEM OF REARING	SCORING OF WHITE STRIPING					TOTAL NUMBER
	0	1	2	3	Unknown	
STANDARD OWN-BRAND	8%	32%	42%	18%	0%	205
HIGHER WELFARE OWN-BRAND	88%	10%	-	-	2%	41

Notes: Unlike most other supermarkets there were higher welfare brands available in 5 of the stores visited.

MORRISONS

STANDARD OWN-BRANDS

The Butcher's on Market Street

HIGHER WELFARE OWN-BRANDS

The Butcher's on Market Street Free-range,
Morrisons Organic

COUNTRY OF ORIGIN

UK



LOCATIONS

Caterham, Hartlepool, Isle of Wight, Leamington Spa,
London, Ormskirk, Sheffield

SYSTEM OF REARING	SCORING OF WHITE STRIPING					TOTAL NUMBER
	0	1	2	3	Unknown	
STANDARD OWN-BRAND	31%	39%	24%	4%	1%	165
HIGHER WELFARE OWN-BRAND	85%	4%	-	-	11%	27

Notes: Higher welfare brands were available in most stores however, there was often a minimal amount on the shelves (8 available in one store being the greatest).



SAINSBURY'S

STANDARD OWN-BRANDS

Sainsbury's British

HIGHER WELFARE OWN-BRANDS

SO Organic

COUNTRY OF ORIGIN

UK

LOCATIONS

Bradford on Avon, Brighton & Hove, Cambridge,
Ilford, Leamington Spa, Sutton, Walthamstow

Sainsbury's

SYSTEM OF REARING	SCORING OF WHITE STRIPING					TOTAL NUMBER
	0	1	2	3	Unknown	
STANDARD OWN-BRAND	20%	36%	38%	7%	-	117
HIGHER WELFARE OWN-BRAND	84%	5%	-	-	11%	55

Notes: Some stores (3) had a large availability of organic chicken while others had no higher welfare available.



TESCO

STANDARD OWN-BRANDS

Willow Farm, Tesco Welfare Approved

HIGHER WELFARE OWN-BRANDS

Tesco Finest Free-range

COUNTRY OF ORIGIN

UK



LOCATIONS

Brighton & Hove, Hartlepool, London (2 different locations), Romford

SYSTEM OF REARING	SCORING OF WHITE STRIPING					TOTAL NUMBER
	0	1	2	3	Unknown	
STANDARD OWN-BRAND	20%	53%	26%	1%	-	117
HIGHER WELFARE OWN-BRAND	70%	22%	7%	-	-	27

Notes: Very little availability of higher welfare brands except in Romford.



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