

# Sept 2023 - Canadian Charolais Breed Average, Percentiles and Trends

## Canada USA Joint Evaluation

The September 2023 evaluation continues a historic step for both the AICA and CCA genetic evaluations. The genetic evaluation was conducted by Angus Genetics Incorporated (AGI) and uses updated heritability values, improved models and combines the pedigree, performance and genomic datasets from the American International Charolais Association and the Canadian Charolais Association into a single joint evaluation. This means that the EPD and Accuracies produced are directly comparable between the AICA and CCA populations. It is important to note that the breed averages, percentiles and trends are calculated on a country specific basis and can not be directly compared between populations. The tables presented in this document can be used to determine where cattle from the US or Canada fit into the relevant population.

While most cattle did not dramatically change ranking, you may notice overall changes in the look and feel of the EPD. This is due to a base change, new models and the impact of combining datasets and adding new data. You may also notice the addition of Maternal Calving Ease and Scrotal Circumference EPD as new tools for application in breeding Charolais cattle. Please use the breed average and percentile information presented to help you develop a feel for the new EPD.

## Single Step Genetic Evaluation

The genetic evaluation uses single step genomic technology. The single step evaluation means that the EPD contain information from pedigree, performance and DNA information directly in the calculation of the EPD. The use of DNA in the EPD calculation allows us to increase the accuracy of the EPD for tested animals and better predict outcomes, particularly on young cattle.

For example, in the evaluation a DNA test is roughly equivalent to the reporting of the following numbers of progeny records

**Table 1. Progeny records roughly equivalent to the information provided from a genotype test in the SSE. Milk equivalents are expressed as grandprogeny from daughters. Carcass traits are expressed as ultrasound record equivalents.**

|             | <b>Progeny Equivalents</b> |
|-------------|----------------------------|
| <b>CE</b>   | 10                         |
| <b>BW</b>   | 25                         |
| <b>WW</b>   | 15                         |
| <b>YW</b>   | 8                          |
| <b>Milk</b> | 10                         |
| <b>REA</b>  | 6                          |
| <b>Fat</b>  | 6                          |
| <b>Marb</b> | 6                          |

Including the DNA information allows us to greatly enhance our selection process, particularly on young animals.

Specific animals may have differences in their EPD between the August 2023 evaluation and the new evaluation, due to additional data and DNA test results and improvements to data editing, however overall, members should notice very few changes to the overall averages or trends and even most animals. The EPD traits and their use are the same as in previous evaluations, and they can be used for selection in the same manner as before.

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### Breed Average EPD

|                | CE         | BW         | WW          | YW           | MILK        | MCE        | TM          | SC         | CW          | REA         | Fat          | Marb        |
|----------------|------------|------------|-------------|--------------|-------------|------------|-------------|------------|-------------|-------------|--------------|-------------|
| <b>Current</b> | <b>4.1</b> | <b>0.4</b> | <b>58.3</b> | <b>107.2</b> | <b>22.2</b> | <b>5.6</b> | <b>51.3</b> | <b>1.0</b> | <b>22.5</b> | <b>0.72</b> | <b>0.004</b> | <b>0.06</b> |
| <b>Sires</b>   | <b>3.9</b> | <b>0.4</b> | <b>57.9</b> | <b>106.3</b> | <b>21.9</b> | <b>5.5</b> | <b>50.8</b> | <b>1.0</b> | <b>21.8</b> | <b>0.72</b> | <b>0.003</b> | <b>0.06</b> |
| <b>Dams</b>    | <b>2.5</b> | <b>1.0</b> | <b>54.8</b> | <b>100.3</b> | <b>20.9</b> | <b>4.9</b> | <b>48.2</b> | <b>0.9</b> | <b>19.9</b> | <b>0.69</b> | <b>0.001</b> | <b>0.06</b> |

Current – all calves born in Canada in the last 2 years (2022 - 2023)

Sires – all sires with a calf reported in Canada in the last 2 years

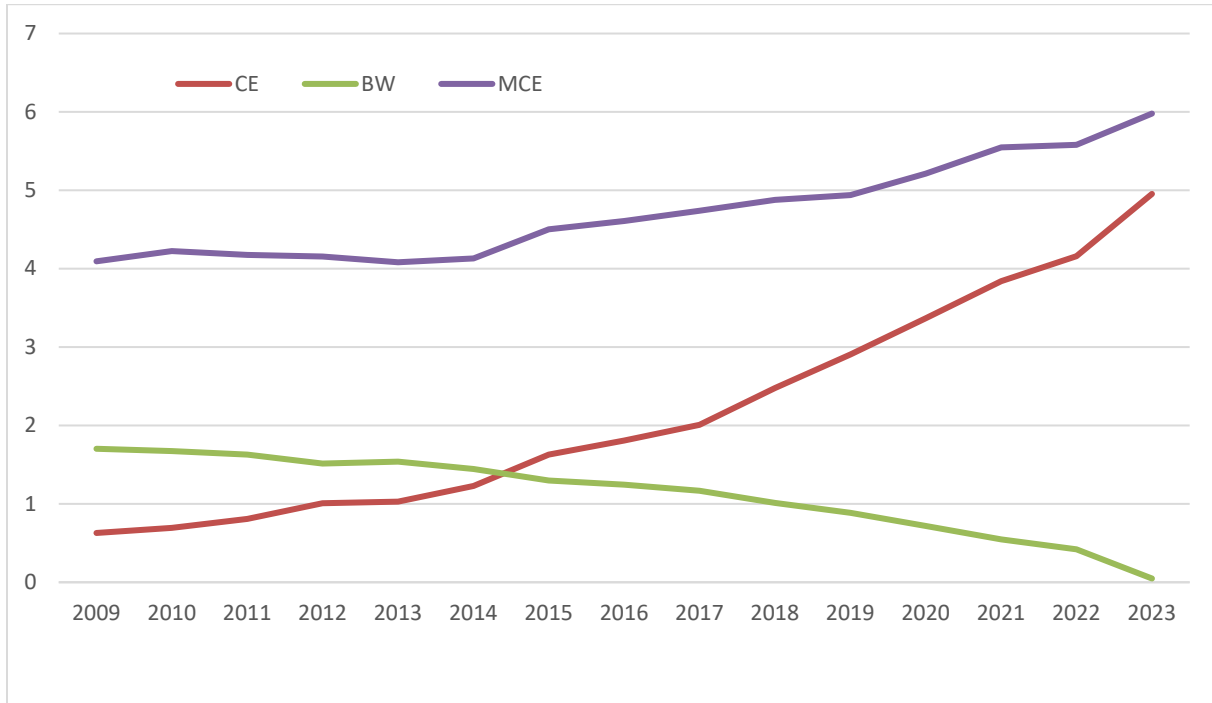
Dams – all dams with a calf reported in Canada in the last 2 years

### Percentile

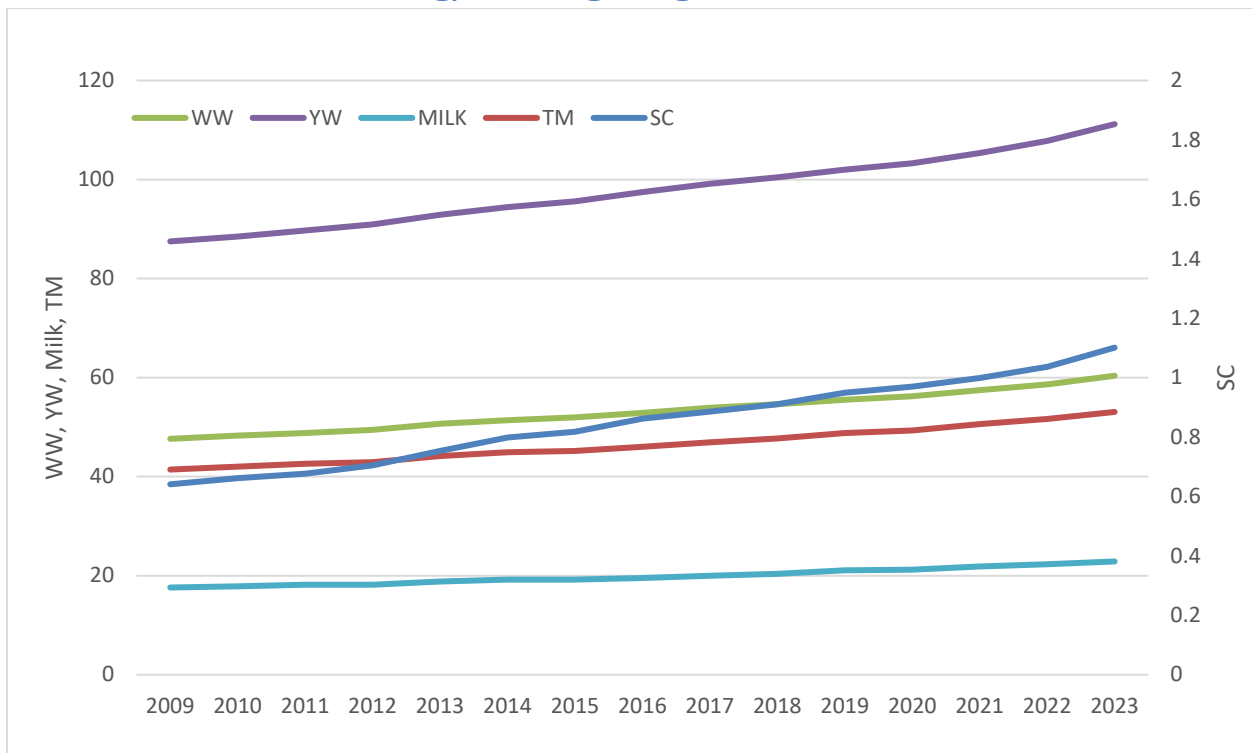
|     | CE         | BW         | WW          | YW           | MILK        | MCE        | TM          | SC         | CWT         | REA         | FAT          | MARB        |
|-----|------------|------------|-------------|--------------|-------------|------------|-------------|------------|-------------|-------------|--------------|-------------|
| Avg | <b>4.1</b> | <b>0.4</b> | <b>58.3</b> | <b>107.2</b> | <b>22.2</b> | <b>5.6</b> | <b>51.3</b> | <b>1.0</b> | <b>22.5</b> | <b>0.72</b> | <b>0.004</b> | <b>0.06</b> |
| Min | -27.0      | -11.3      | 5.7         | 27.2         | -4.1        | -15.3      | 13.9        | -0.6       | -17.0       | 0.04        | -0.042       | -0.20       |
| Max | 22.4       | 12.0       | 103.1       | 183.0        | 47.5        | 17.9       | 86.8        | 2.4        | 53.7        | 1.47        | 0.078        | 0.36        |
| SD  | 5.62       | 2.44       | 9.34        | 15.56        | 5.52        | 3.82       | 7.88        | 0.34       | 7.74        | 0.14        | 0.013        | 0.06        |
| 1   | 16.3       | -6.1       | 81.5        | 146.2        | 35.2        | 13.3       | 69.9        | 1.8        | 40.7        | 1.05        | -0.025       | 0.22        |
| 2   | 15.0       | -5.1       | 78.4        | 141.1        | 33.7        | 12.5       | 67.6        | 1.7        | 38.5        | 1.01        | -0.021       | 0.20        |
| 3   | 14.2       | -4.5       | 76.6        | 137.7        | 32.6        | 12.1       | 66.0        | 1.6        | 37.0        | 0.98        | -0.019       | 0.19        |
| 4   | 13.5       | -4.1       | 75.2        | 135.4        | 31.9        | 11.7       | 64.9        | 1.6        | 35.9        | 0.96        | -0.017       | 0.18        |
| 5   | 13.0       | -3.8       | 74.0        | 133.6        | 31.3        | 11.4       | 64.1        | 1.6        | 35.0        | 0.95        | -0.016       | 0.17        |
| 10  | 11.1       | -2.7       | 70.1        | 127.2        | 29.2        | 10.3       | 61.3        | 1.4        | 32.3        | 0.89        | -0.011       | 0.14        |
| 15  | 9.8        | -2.0       | 67.7        | 123.0        | 27.8        | 9.5        | 59.4        | 1.4        | 30.4        | 0.86        | -0.009       | 0.12        |
| 20  | 8.8        | -1.5       | 65.8        | 119.9        | 26.7        | 8.9        | 57.9        | 1.3        | 28.9        | 0.83        | -0.006       | 0.11        |
| 25  | 7.9        | -1.1       | 64.3        | 117.1        | 25.8        | 8.3        | 56.6        | 1.2        | 27.6        | 0.81        | -0.005       | 0.10        |
| 30  | 7.2        | -0.7       | 62.9        | 114.7        | 25.0        | 7.8        | 55.4        | 1.2        | 26.5        | 0.78        | -0.003       | 0.09        |
| 35  | 6.4        | -0.3       | 61.6        | 112.5        | 24.2        | 7.3        | 54.4        | 1.2        | 25.5        | 0.77        | -0.001       | 0.08        |
| 40  | 5.7        | 0.0        | 60.5        | 110.5        | 23.5        | 6.9        | 53.4        | 1.1        | 24.5        | 0.75        | 0.000        | 0.07        |
| 45  | 5.0        | 0.3        | 59.3        | 108.5        | 22.9        | 6.4        | 52.4        | 1.1        | 23.5        | 0.73        | 0.002        | 0.07        |
| 50  | 4.3        | 0.6        | 58.2        | 106.6        | 22.2        | 5.9        | 51.5        | 1.0        | 22.6        | 0.71        | 0.003        | 0.06        |
| 55  | 3.6        | 0.8        | 57.0        | 104.8        | 21.5        | 5.4        | 50.5        | 1.0        | 21.7        | 0.70        | 0.005        | 0.05        |
| 60  | 3.0        | 1.1        | 55.9        | 102.9        | 20.8        | 4.9        | 49.5        | 1.0        | 20.7        | 0.68        | 0.007        | 0.04        |
| 65  | 2.2        | 1.4        | 54.8        | 101.0        | 20.1        | 4.4        | 48.4        | 0.9        | 19.7        | 0.66        | 0.008        | 0.04        |
| 70  | 1.4        | 1.7        | 53.5        | 98.9         | 19.4        | 3.9        | 47.3        | 0.9        | 18.7        | 0.65        | 0.010        | 0.03        |
| 75  | 0.6        | 2.1        | 52.2        | 96.8         | 18.5        | 3.2        | 46.2        | 0.8        | 17.6        | 0.63        | 0.013        | 0.02        |
| 80  | -0.3       | 2.4        | 50.7        | 94.3         | 17.6        | 2.5        | 44.9        | 0.8        | 16.4        | 0.60        | 0.015        | 0.01        |
| 85  | -1.5       | 2.8        | 48.9        | 91.4         | 16.6        | 1.6        | 43.4        | 0.7        | 14.9        | 0.58        | 0.018        | 0.00        |
| 90  | -3.0       | 3.4        | 46.7        | 87.8         | 15.3        | 0.5        | 41.3        | 0.6        | 12.8        | 0.55        | 0.021        | -0.01       |
| 95  | -5.4       | 4.2        | 43.4        | 82.6         | 13.3        | -1.1       | 38.3        | 0.4        | 9.8         | 0.50        | 0.026        | -0.03       |
| 100 | -27.0      | 12.0       | 5.7         | 27.2         | -4.1        | -15.3      | 13.9        | -0.6       | -17.0       | 0.04        | 0.078        | -0.20       |
| Num | 36912      | 37486      | 37486       | 37486        | 37486       | 36912      | 37486       | 37486      | 20205       | 20205       | 20205        | 20205       |

Percentiles are based on Current Canadian Born Calves – all calves born in the last 2 years (2022 – 2023)

## Sept 2023 - Canadian Charolais Breed Average, Percentiles and Trends Genetic Trends for Calving Ease, Birth Weight and Maternal Calving Ease

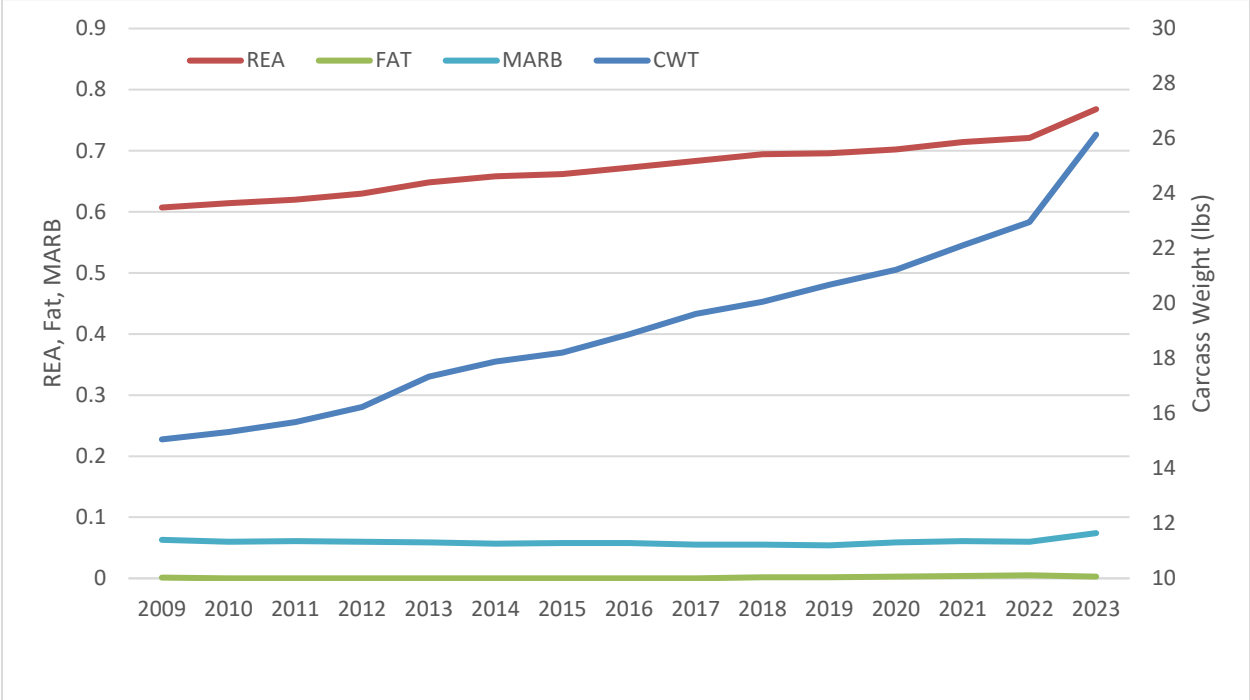


## Genetic Trends for Weaning/Yearling Weight, Milk, Total Maternal and Scrotal



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## Genetic Trends for REA, Fat, Marbling and Carcass Weight



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### EPD Abbreviations

| Trait | Trait                 | Description   | Units      |
|-------|-----------------------|---|------------|
| CE    | Calving Ease          | Genetic difference for unassisted calving of progeny. A larger number indicates easier calving (less assistance).   | Unassisted |
| BW    | Birth weight          | Describes genetic differences for progeny birth weight. A larger number indicates heavier calves at birth.  | Lbs        |
| WW    | Weaning Weight        | Genetic difference for progeny weaning weight. A larger number indicates heavier calves at weaning.   | Lbs        |
| YW    | Yearling Weight       | Genetic difference for progeny yearling weight. A larger number indicates heavier calves at one year of age.  | Lbs        |
| MILK  | Milk                  | Genetic difference for daughters' progeny weaning weight due to their milk production (grandprogeny). A larger number indicates heavier calves from daughters at weaning. | Lbs        |
| MCE   | Maternal Calving Ease | Genetic Difference for daughters' calving unassisted as first calf heifers. A larger number indicates easier calving (less assistance).                                   | Unassisted |
| TM    | Total Maternal        | Genetic difference for daughters' progeny weaning weight due to their genes for milk and growth (grandprogeny). A larger number indicates heavier calves at weaning.      | Lbs        |
| SC    | Scrotal Circumference | Genetic differences for male progeny scrotal size at 1 year of age. A larger number indicates larger scrotal circumference at a year old.                                 | Cm         |
| CWT   | Carcass Weight        | Genetic difference for progeny carcass weight in pounds. A larger number indicates heavier carcasses.   | Lbs        |
| REA   | Rib-Eye Area          | Genetic difference for progeny Rib-Eye area in square inches. A larger number indicates bigger rib-eye muscle.  | Sq. In.    |
| FAT   | Fat Thickness         | Genetic difference for progeny backfat thickness at 12/13 rib. A larger value indicates fatter carcasses.   | in         |
| MARB  | Marbling              | Genetic difference for progeny marbling score (quality grade) in marbling score units. A larger number indicates more marbling.   | MSU        |

### Heritability and Correlations used in the Joint North American Evaluation ( $H^2$ on the Diagonal)

|        | BW          | WW          | PWG         | Milk        | SC          | REA         | CW          | Fat         | Marb        | CE          | MCE         | Ultrasound (Correlated Traits) |             |             |             |             |      |
|--------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------------------------|-------------|-------------|-------------|-------------|------|
|        |             |             |             |             |             |             |             |             |             |             |             | IMF                            | REA         | Wt          | Rib         | Rump        |      |
| BW     | <b>0.49</b> | 0.20        | 0.10        |             |             |             |             |             |             | -0.76       | 0.16        |                                |             |             |             |             |      |
| WW     |             | <b>0.26</b> | 0.16        |             | 0.28        | 0.35        | 0.45        | -0.10       | -0.07       |             |             |                                |             |             |             |             |      |
| PWG    |             |             | <b>0.31</b> |             | 0.35        |             |             |             |             |             |             |                                |             |             |             |             |      |
| Milk   |             |             |             | <b>0.14</b> |             |             |             |             |             |             |             |                                |             |             |             |             |      |
| SC     |             |             |             |             | <b>0.31</b> |             |             |             |             |             |             |                                |             |             |             |             |      |
| REA    |             |             |             |             |             | <b>0.34</b> |             |             |             |             |             |                                | 0.70        |             |             |             |      |
| CW     |             |             |             |             |             |             | <b>0.21</b> |             |             |             |             |                                |             | 0.75        |             |             |      |
| Fat    |             |             |             |             |             |             |             | <b>0.26</b> | 0.15        |             |             |                                |             |             |             | 0.70        | 0.48 |
| Marb   |             |             |             |             |             |             |             |             | <b>0.36</b> |             |             |                                | 0.69        |             |             |             |      |
| CE     |             |             |             |             |             |             |             |             |             | <b>0.24</b> | -0.06       |                                |             |             |             |             |      |
| MCE    |             |             |             |             |             |             |             |             |             |             | <b>0.16</b> |                                |             |             |             |             |      |
| IMF    |             |             |             |             |             |             |             |             |             |             |             | <b>0.23</b>                    |             |             |             |             |      |
| UREA   |             |             |             |             |             |             |             |             |             |             |             |                                | <b>0.39</b> |             |             |             |      |
| U Wt   |             |             |             |             |             |             |             |             |             |             |             |                                |             | <b>0.27</b> |             |             |      |
| U Fat  |             |             |             |             |             |             |             |             |             |             |             |                                |             |             | <b>0.35</b> |             |      |
| U Rump |             |             |             |             |             |             |             |             |             |             |             |                                |             |             |             | <b>0.38</b> |      |

## **Sept 2023 - Canadian Charolais Breed Average, Percentiles and Trends**

### **IMPORTANT NOTE:**

While every attempt was made to ensure that animals used in both the AICA and CCA herdbook were correctly matched, it is possible that animals may have been missed. If you identify animals with EPD that differ between the AICA and CCA datasets, please contact your association with the animal information so that they can be corrected and updated prior to the next evaluation.

For those importing/exporting animals, please ensure that the animal is properly registered in the country of origin and that the information is provided to the country of import. This ensures that animals are properly matched for future evaluations.