PROVINCIAL WINTER FAIR BEEF CARCASS JUDGING MANUAL

Source: Aggie Meats

Prepared by: Cara-Lee Haughton
PWF Carcass Committee
(March 2006)

TABLE OF CONTENTS

PURPOSE OF BEEF CARCASS JUDGING

Carcass judging is used to evaluate the meat quality of a beef animal through both quantitative and qualitative properties based on industry standards.

Qualitative:
1. *Maturity* – the age of the animal where the age affects the tenderness
2. *Marbling* – the intramuscular fat streaks within the meat
3. *Meat Color* – the degree of redness of the meat which affects consumer acceptability
4. *Quality Grade* – determined by the degree of marbling in the meat
5. *Sex* – Male or female- where the pronounced masculinity affects the meat color and palatability

Quantitative
1. *Fat thickness* – the average amount of fat covering the carcass; too much fat equals waste
2. *Rib Eye Area* – the area should be an average size, but not too big for the consumer; the retail cut yield increases as the rib eye area increases
3. *Lean Meat Yield* – an estimation of the percentage of the carcass that is red meat
4. *Fat Color* – should be firm white to an amber color

PURPOSE OF GRADING

- Grading is intended to place carcasses into uniform groups of similar quality, yield, and value, in order to facilitate marketing and production decisions
- Grading may be used as a basis for producer settlement
- Grading attempts to ensure that consumers have an improved product through greater consistency and predictability in the eating quality of specific grades of beef
- Grading is not mandatory

(Canadian Beef Grading Agency, 2005)

CANADIAN BEEF QUALITY GRADES
(Canadian Beef Grading Agency, 2005)

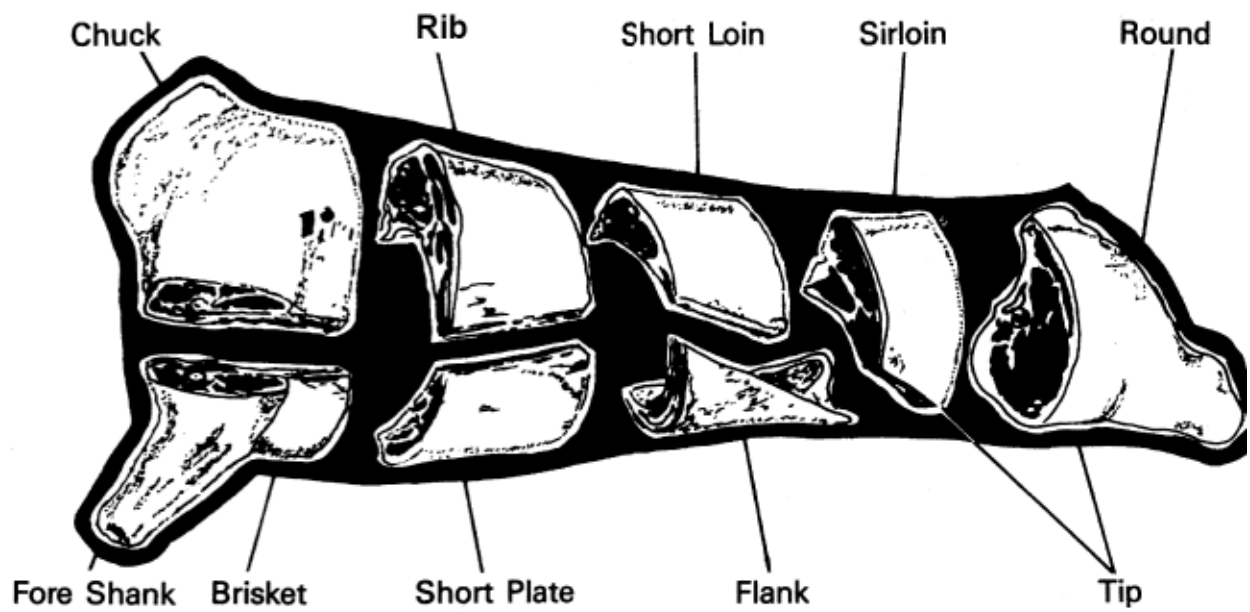| Grade	Maturity (Age)	Muscling	Rib Eye Muscle	Marbling	Fat Colour and Texture	Fat Measure
CANADA PRIME	**Youthful**	**Good to excellent with some deficiencies**	**Firm, bright red**	**Slightly abundant**	**Firm, white or amber**	**7-8 mm**
CANADA A, AA, AAA	**Youthful**	**Good to excellent with some deficiencies**	**Firm, bright red**	**A- trace AA - slight AAA - small**	**Firm, white or amber**	**7-8 mm**
B1	Youthful	Good to excellent with some deficiencies	Firm, bright red	No requirement	Firm, white or amber	Less than 2 mm
B2	Youthful	Deficient to excellent	Bright red	No requirement	Yellow	No requirement
B3	Youthful	Deficient to good	Bright red	No requirement	White or amber	No requirement
B4	Youthful	Deficient to excellent	Dark red	No requirement	No requirement	No requirement
D1	Mature	Excellent	No requirement	No requirement	Firm, white or amber	Less than 15 mm
D2	Mature	Medium to excellent	No requirement	No requirement	White to yellow	Less than 15 mm
D3	Mature	Deficient	No requirement	No requirement	No requirement	Less than 15 mm
D4	Mature	Deficient to excellent	No requirement	No requirement	No requirement	15 mm or more
E	Youthful or mature	Pronounced masculinity				

STEPS TO EVALUATING A BEEF CARCASS

For the purposes at the Provincial Winter Fair 4-H Beef Carcass Judging Competition, only a few of the grading characteristics will be considered:

- a) Marbling
- b) Lean Meat Yield
- c) Average Fat Thickness
- d) Weight
- e) Fat Distribution
- f) Fat Color

As in any other judging class, you first look and analyze the entire class as a whole then focus on the individual carcasses' characteristics.

1. First look at the marbling (fat streaks) within the rib eye to determine the approximate marbling grade: Trace (A), Slight (AA), Small (AAA), Slightly Abundant (Prime).
2. Estimate the yield grade from the amount of red meat in the rib eye compared to the size of the red eye
3. Compare the average fat thicknesses around the rib eye
4. Compare the weights of the carcasses to judge if they are too heavy or too light
5. Compare the distribution of the fat throughout the carcass making sure the shoulder and hip are not bare
6. Look at the color of the fat on the carcasses to determine if its white or amber
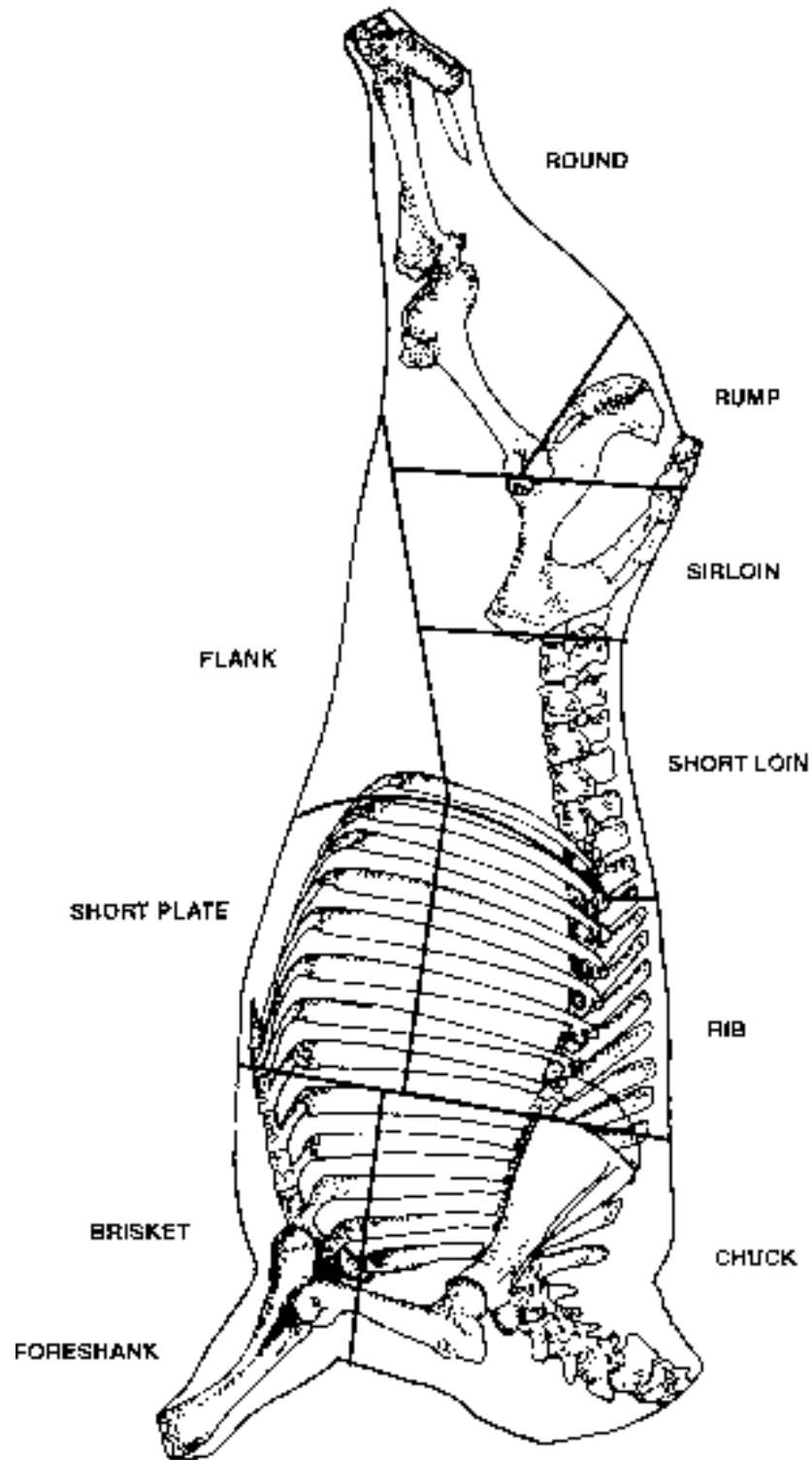
PICTURE OF A BEEF CARCASS

Chuck   Rib   Short Loin   Sirloin   Round

Fore Shank   Brisket   Short Plate   Flank   Tip

Source: ACES Publications
http://www.aces.edu/pubs/docs/H/HE-0418/

PICTURE OF BEEF WHOLESALE CUTS

ROUND

RUMP

SIRLOIN

FLANK

SHORT LOIN

SHORT PLATE

RIB

BRISKET

CHUCK

FORESHANK

Source: Fabrication of Beef, (2006)
http://labs.ansci.uiuc.edu/meatscience/Library/beef%20fabrication.htm

MARBLING

Marbling is the flecks of intramuscular fat distributed in the muscle tissue. The extent or degree of marbling is the primary determinant of the quality grade. To assess marbling, one looks at the rib eye between the 12th & 13th ribs (Utah State University, 2005).

The assessment of marbling is based on the average amount, size and distribution of fat particles or deposits in the rib eye. Meat marbling affects the eating quality of beef for juiciness, flavour, and tenderness (Canadian Beef Grading Agency, 2005). The quality grads Canada "A" grades differ by amount of marbling in the meat, an assessment done by the Canadian Beef Grading Agency.
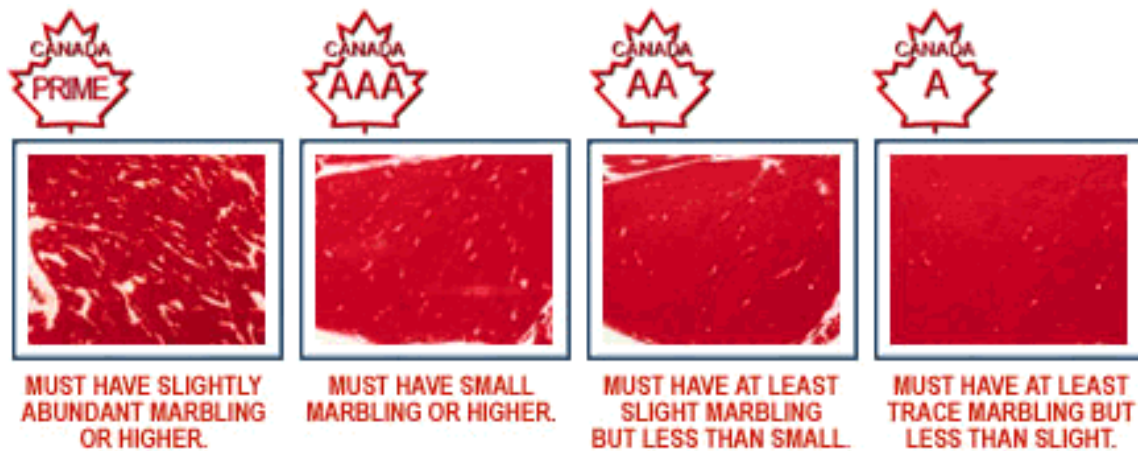
Canadian beef carcass quality grading utilizes four levels of marbling: TRACE, SLIGHT, SMALL, and SLIGHTLY ABUNDANT:
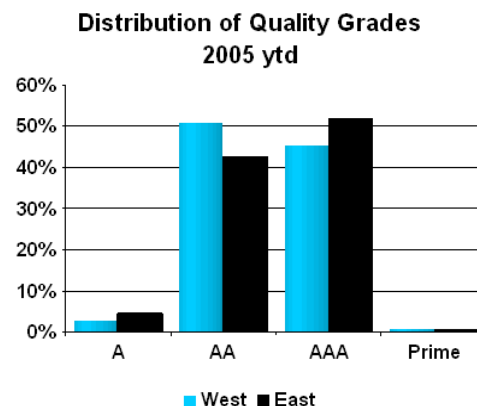
Prime – Slightly Abundant
AAA—Small
AA – Slight
A – Trace

Source: Beef Information Centre, (2006)
http://www.beefinfo.org/marbling.cfm

The Federal Government, based on the recommendations from the Canadian Beef Industry, sets the beef grading standards.

Source: Canadian Beef Grading Agency, (2005)

-7-

LEAN MEAT YIELD

The yield is an estimation of the percentage of the carcass that is red meat (Canadian Beef Grading Agency, 2005). Yield is determined by measuring exterior fat thickness as well as the length and width of the rib eye muscle (Beef Information Center, 2006).

Only Canada "A" grade carcasses are assessed for a lean meat yield class. When the yield class is determined, the yield class is stamped in red ink on the short loin and rib sections of each side of the carcass (Beef Information Center, 2006).

There are three yield classes.

| CANADA 1	CANADA 2	CANADA 3
59% or more of lean, useable meat	54-58% of lean, useable meat	53% or less of lean, useable meat

Source: Beef Information Center (2006) http://www.beefinfo.org/specs_grading.cfm

The method the grader uses to estimate lean yield was developed by the Lacombe Research Station and implemented in 1992. The ruler was revised in 2001 to accommodate changes to the reduction in minimum back fat required.
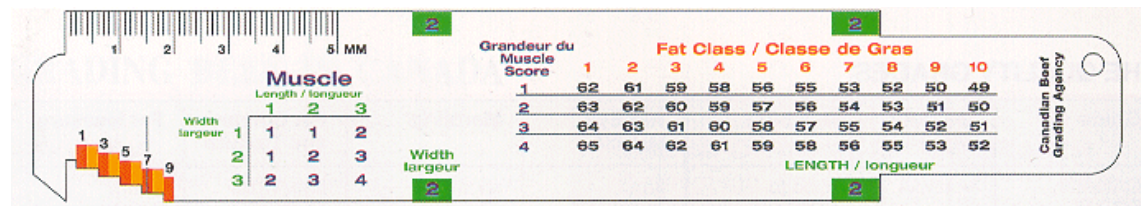
Source: Canadian Beef Grading Agency (2005) http://www.beefgradingagency.ca/yield.html (Not actual size)

To determine the yield grade, the ruler is applied to the surface that is exposed between the 12th & 13th rib by measuring: **1. Length—maximum length, 2. Width—Maximum width & generally perpendicular to the longitudinal axis, 3. Fat Class—Minimum point of thickness &perpendicular to the outside surface**
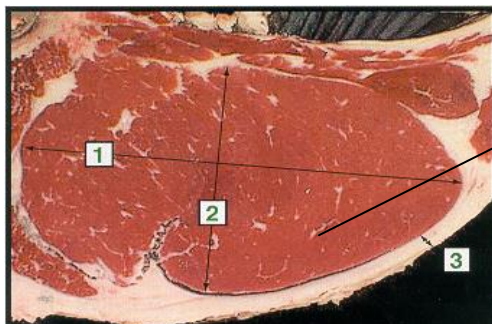
Marbling
(Fat Streaks)

Source: Canadian Beef Grading Agency (2005)

WEIGHT

The weight of a beef carcass includes bone, muscle and fat. An ideal weight should provide an ideal yield with the smallest amount of waste including excess fat.

CARCASS WEIGHT	PWF AWARDED POINTS
<700 lbs	0
700 lbs – 724 lbs	2
725 lbs – 749 lbs	3
750 lbs – 774 lbs	4
775 lbs – 799 lbs	6
800 lbs – 925 lbs	**10**
926 lbs – 999 lbs	8
1000-1050 lbs	4
>1050 lbs	0

FAT DISTRIBUTION

A small layer of fat should lightly cover the carcass, no more than 7-8 mm at both ends. There should be no bare spots at either end or excess fat on the carcass.

Light Cover- (7-8 mm) at both ends – Excellent
Bare at one end of the carcass (hip or shoulder) – Good
Bare at both ends of carcass (hip or shoulder) – Marginal
Excess fat cover (Waste) – Poor
Under 2 mm fat thickness – Rejected to a B grade

FAT COLOR

Beef carcasses should exhibit **white and firm fat.** Although fat somewhat focuses on consumer acceptance, fat texture influences cooking results and flavour. Note: The roughage fed to the beef animal sometimes affects fat color. To determine the fat color, examine the carcasses' fat cover's color.

JUDGING CARD EXAMPLE

BEEF CARCASS JUDGING CARD   COMPETITOR # _____

PLACING: _____
_____
_____
_____

PLACING SCORE: _____
REASON SCORE: _____

TOTAL SCORE: _____

REASONS

____OVER_____ **(Mark 3 reasons)**

____OVER_____ **(Mark 3 reasons)**

____OVER_____ **(Mark 3 reasons)**

_____ LAST **(Mark 1 reason)**
(Reason why place last)

FAT COLOR	AVG FAT THICKNESS	WEIGHT	FAT DISTRI-BUTION	MARBLING	LEAN MEAT YIELD	SCORE

TOTAL _____

INTERPRETATION

1. Fat color — White – Excellent / Amber – Acceptable / Yellow – Rejected

2. Avg. Fat Thickness — Ideal – 7-8 mm / Minimum – 2 mm (<2 B Grade) / Maximum – 14 mm

3. Dressed Weight — Ideal – 800 lbs – 925 lbs / Minimum – 700lbs (<700 lbs Really Under finished) / Maximum – 1050lbs (> 1050 lbs Greater Waste and Over finished)

4. Fat Distribution — Light Cover- (7-8 mm) at both ends – Excellent / Bare at one end of the carcass – Good / Bare at both ends of carcass – Marginal / Excess fat cover (Waste) – Poor / Under 2 mm fat thickness – Rejected to a B grade

5. Marbling — Slightly Abundant – Prime / Small – AAA / Slight – AA / Trace – A

6. Lean Meat Yield — A1-- >58 % / A2 – 54-58 % / A3 -- < 54 %

> 1. Mark 3 reasons for why you are putting one over another
> 2. On the last one, mark the reason why you are putting it last (ie lack of marbling

BIBLIOGRAPHY

Beef Information Center (2006). *Beef Cuts & Grading.* Retrieved February 14, 2006.
http://www.beefinfo.org/specs_grading.cfm

Canadian Beef Grading Agency (2005). *Grades, Yields and Charting.* Retrieved February 21, 2006. http://www.telusplanet.net/public/cbga2/

Meat Science on the Web (2006). *Fabrication of Beef.* Retrieved March 6, 2006.
http://labs.ansci.uiuc.edu/meatscience/Library/beef%20fabrication.htm

ACES Publications (2006). *Beef Cuts* Retrieved March 6, 2006.
http://www.aces.edu/pubs/docs/H/HE-0418/

Aggie Meats (2005). *Beef Carcass Photo.* Retrieved March 6, 2006.
http://aggiemeat.tamu.edu/judging/Beef%20Carcass%20Class/AllSides.html

Utah State University (January 2005). *Beef Quality & Yield Grading.* Retrieved February 10, 2006. http://extension.usu.edu/files/factsheets/beef3.pdf