

Forage Fed Beef

FORAGE FED BEEF

Forage fed beef (also known as grass fed beef), refers to meat that has been produced by feeding beef cattle a diet of high quality forage from start to finish. Grain is not utilized at all during this process. The end product is a high quality meat that is comparable to grain finished beef, according to taste test panels. Grass fed beef is leaner and therefore less in calories, than feedlot finished beef. In fact, its fat content is comparable to skinless chicken breast, wild deer, or elk. Grass fed beef also contains a higher level of omega-3 and conjugated linoleic acid (CLA) than grain fed beef, two components reputed to have significant health benefits.

CLA's have been shown to have positive health benefits including the suppression of cancerous tumors and the ability to moderate body weight, body composition, glucose metabolism and the immune system. Clinical trials have also demonstrated the heart health benefits of omega-3 and are regularly promoted in eggs and margarine in today's market.

Environmental benefits are another factor spurring interest in forage fed beef. Forage finished animals in Manitoba have the potential to spend the majority of their life on pasture rather than a feedlot, thereby, reducing the costs associated with manure clean up and the risk of runoff into adjacent waterways. Cattle too, are happier and healthier when raised in pasture, reducing the need for antibiotics, growth hormones and supplements.



(Above) Calf on pasture near Selkirk, MB

A new association entitled the Manitoba Grass Fed Beef Association was formed in the spring of 2008. This group of devoted producers, Manitoba Forage Council (MFC) and Manitoba Agriculture, Food and Rural Initiatives (MAFRI) staff, have been working towards the development of a value chain for the product. To read more go to www.manitobagrassfedbeef.ca. The Manitoba Forage Council (MFC) has also developed a guide to finishing forage finished beef which is available through MFC, MAFRI or at www.mbforagecouncil.mb.ca

Raising and finishing cattle on forage requires a strong focus on grazing and production management, forage quality, animal genetics and animal health to achieve a consistent weight gain throughout the animal's 18 – 24 month life span. The following elements are required to produce excellent quality forage finished beef.

CLA (conjugated linoleic acid) content in forage reduced during the wilting process, however, the use of legumes in the forage mixture (up to 30% more than pure grass), increases the CLA content in the fatty tissue of the animal.

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KEY ELEMENTS FOR PRODUCTION

i) High Quality Forage Production and Management

The goal is to manage your forage to produce an average daily gain of 1.5 to 2.0 lbs. per day from birth to finish weight. One way to maintain consistency is to develop a forage chain that includes a combination of high quality forages and annual forages such as green leaf corn and Italian rye grass for both grazing and storing. During the growing stage, forage with high protein and high energy is required. The finishing stage requires forage with high energy, and lower protein. Too much protein is counter productive as the animal uses up energy trying to rid itself of the surplus protein.

Perennial Pastures

Grass/legume Pastures

Perennial pasture mixtures should have a minimum of 30% legume (usually alfalfa) and a grass species that is high quality and has superior re-growth characteristics. Meadow Brome, Orchard Grass and Tall Fescue are good choices. Pastures with a low alfalfa percentage can be used in the cow/calf phase, however, they should not be used in the finishing phase. The pasture should be renovated when the alfalfa percentage drops to 25% or less.

Native Pastures

Very high quality forage may be available in an unimproved or native pasture if it is in the vegetative stage (e.g. the first growth and re-growth stages), however, re-growth is usually slower than seeded or tame forages. Complementary grazing systems use a combination of native and tame forages and graze at each forage's optimum stage.

Annual Forages

Annual forages can be grazed to supplement perennial pastures and provide higher energy forage during the finishing phase. These annual pastures should not be grazed until the growth is 6 to 8 inches high to prevent protein/energy imbalances due to the high moisture content of the forage. The objective is to have a high energy, lower protein forage.

ii) Animal Genetics

Good forage converting genetics are essential – fast maturing animals that will marble on high quality forage is the goal. Not all animals in your current herd will be suitable for forage finishing so it may take some time to develop the required genetic characteristics.

(Below), Grass Fed Cattle, Argentina



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The target weight per animal is approximately 1,100 – 1,200 lbs. Weigh the cow herd and select cows that weigh approximately 1100 lbs. The offspring will mature at plus or minus 100 lbs. Select animals that have a deep chest, shorter legs, a wide back and thick muscling and flanks. Using one particular breed will not guarantee the necessary characteristics – it is more important to select the correct animals for breeding.

A 1,000 lb. cow can wean 50% of its body weight compared to a 1500 lb. cow that weans only 41% of its body weight. Smaller cows generally have a 10% greater reproductive efficiency, cost less to raise and produce more beef per acre than a larger cow.

iii) Slaughter Age

Plan to market animals between 18 to 24 months of age at a finished (mature) weight of 1,100 to 1,200 lbs. It is generally observed that animals over 24 months of age have inconsistent meat quality, however, they can still produce good eating meat from a forage only diet. Animal weight gains must be continuous throughout the life of the animal – slower gains may result in animals having to be fed over a second winter.

iv) Animal Management

The rate of weight gain and the animal's stress level have a major impact on meat flavour and tenderness. The animal must have a consistent weight gain throughout its life – any weight loss periods will result in tough beef. Weigh your stock every 30 to 60 days to determine performance and cull those that are gaining less than 1.5 lbs. per day. Low stress handling systems and techniques should be used to minimize stress. Spaying heifers shortens the finishing period and results in a calmer animal that fattens easily.

Ultrasound technology is now available in Manitoba and is a great tool to determine the carcass characteristics prior to shipping.

Many producers have now moved their calving season to late spring (May or June) to reduce winter costs.

v) Grazing Management

In order to maintain first-rate forage you should use high quality pasture species and manage the re-growth using a rest recovery system. High energy annuals in the grazing system should be used to supplement any lower quality perennial forage production. Extended grazing technology such as bale or swath grazing distributes the manure and reduces production costs.

vi) Pasture Plans

There is no “right” number of paddocks, however, higher numbers offer greater control of the grazing system. Many grazing systems consist of 8-10 permanent paddocks with the use of temporary fencing to further subdivide these paddocks. Develop your paddocks according to your soil types, and the type of forage species (tame, native or annual) present. Paddock size (acres) can vary, however, by adjusting the number of grazing days and the animal numbers (stock density) you can control grazing of the animals according to the forage availability and quality.

vii) Stock Rate and Density

Determine the stocking rate (animal units for the season) based upon the forage estimates available. Stocking rates are usually determined from experience, however, you can estimate it using the Pasture Planner Booklet available through MFC or MAFRI.

Proper stock density (animal units for the grazing period per acre) will ensure good animal performance. Lower density (preferred for forage finishing) results in excellent animal performance as the animals have access to the best forage, particularly for the finishing period. Higher stock density provides greater returns per acre as the stock eat all available forage, however, the animal gain is lower as they are forced to eat lower quality forage. It is preferred to have the finishing animals have access to fresh pasture to “cream” the high quality forage and then have the cow herd “clean up” the remainder.

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(Above), Cattle on Corn, Brandon, MB

viii) Harvesting & Storing Quality Forage

Harvest your surplus high quality pasture forage for later use and store or stockpile in a system to maintain its value. To maximize quality, harvest at the early (bud or boot stage) and use a silage or dry hay system to preserve quality. Manage the dry down process by using a wide swath at cutting to maximize the sun's solar energy and use swath turners to speed up the drying process. Forage grown for storage should be harvested at the optimum stage of maturity to ensure maximum yield and quality for the later season cuts (late bud or early bloom stage, or before mid-June). Second and third cuts should also be taken at the late bud to early bloom stage. Use a PEAQ stick to estimate quality in the field (available at MAFRI or MFC). Forages cut in the afternoon are higher in soluble carbohydrates than hay harvested earlier in the day, however, the trade off is that there is less time to wilt

the forage down to a safe storage level for dry hay. Cutting in the afternoon is preferred for silage to capture maximum plant energy levels. Use only high quality forage (determined by a feed test) for the winter period. The Relative Feed Value (RFV) should be at least 130 and preferably 150 to obtain good gains of 2.0 per day or greater over winter. [Relative Feed Value is a single value used to describe forage quality and commonly used for determining hay quality (intake and energy value)].

ix) Fall/Winter Forage Feeding

Start your planning early to ensure you can provide your stock with adequate nutrition over fall and winter. Annuals seeded late in the season can be used for extended grazing in late fall, and forage harvested in early August can be stockpiled in a designated area for extended grazing. Stored hay or silage can be used to supplement nutrition needs.

Always test your feed to determine which stock it is suitable for.

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Dry cows need an RFV of 100, feeders an RFV of 130-150, and finishers an RFV of 150+. Forage that has an RFV of 130-150 has been shown to provide a weight gain in excess of 2.0 lbs. per day in feeder animals over wintered in Manitoba. It may be more economical to purchase high quality hay with an RFV of 130-150 than to try to grow it yourself – especially if weather conditions are not ideal. Many of the Manitoba hay marketers will provide a hay RFV feed analysis to prospective buyers.

Consider developing a forage profile for your herd to determine the forage quality for all the animals in the herd. Take feed samples every 3-4 weeks from the pastures (what the animals are actually eating), or monthly from stockpiled forage or stored forage. Do this over a three-year period to develop your forage profile. Use a qualified nutritionist to ensure a proper ration is being used to achieve the target gains. Feed quality, environmental conditions and the type of animal (cow/calf, feeder etc.) must be considered.

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MARKETING, PROCESSING & COOKING

Companies marketing forage fed beef (grass-fed beef) have strict protocols such as backfat thickness, no antibiotics or growth hormone usage, animal weight etc. for production and processing. To see the Manitoba Grass Fed Beef Association Protocol go to www.manitobagrassfedbeef.ca

After slaughter, animals should be dry aged a minimum of 14 days to improve tenderness. It is preferable to have a slower chill process than grain fed beef because forage fed cattle have less fat cover on the carcass. However, too long of a chill process results in the oxidation of antioxidants and increases the metallic, grassy or game flavour. Home freezers are not optimal as they do not freeze the meat quickly, resulting in the formation of large ice crystals in the muscle cells, cell destruction, a loss of juice in the meat, and possibly an off flavour. Work with your processor to manage the cooling process.

Because forage fed beef is very lean it should not be cooked quickly as this destroys the proteins and results in tough meat. Roasts should be cooked at 275° and vegetable or olive oil should be used to promote browning, enhance the flavour and prevent dryness and sticking. Also, thaw the meat in a fridge,

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(Above) Bale Grazing in Manitoba

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(Above), Cattle on Pasture, Selkirk, MB