

BEEF CATTLE— Efficiently supplying protein to our diets

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The virtues of beef as a protein source in the diet are examined in this article. Cattle producers are invited to spread the gospel of how beef contributes to a protein-starved world.



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Marriott received his bachelor's and master's degrees from the University of Missouri, where he was a member of the intercollegiate livestock and meats judging teams. Prior to receiving his Ph.D. degree from Texas A&M University, he spent four years with Swift & Co. in fresh meat marketing and six years with Safeway Stores, Inc. in fresh meat operations.

In addition to his extension activities at VPI & SU, Marriott has taught several graduate and undergraduate courses related to food science, written two books and many articles related to food science, and conducted research leading to publication of many technical papers on the microbiology, packaging, transportation, processing and nutrient analyses of meat. His current research activities are related to accelerated processing of dry-cured and restructured muscle foods.

The most powerful nations with the highest standard of living generally have a common thread. They have a more developed system for production of agricultural products—especially meat animals. Efficient production of ruminants such as cattle has permitted countries such as the United States to provide the population the best diet in the world.

This feat is possible because the ox is one of the most efficient solar energy devices known to our society. Can you think of a more efficient converter of the sun's energy via utilization of low grade roughages and cereal grains to a foodstuff so palatable and nutritious as beef? Every animal you raise is a highly efficient mini solar plant that aids in feeding a protein-starved world.

Misinformed consumers

Unfortunately, certain misinformed consumers have claimed beef producers are inefficient because they feed a large quantity of grain (which could be fed to humans) to cattle. These voices suggest grain should be fed directly to people instead of cattle. Their premise is that acreage used in animal agriculture can be made available to grow plants that can be consumed directly by humans.

You as a livestock producer can readily recognize that those who advocate feeding roughages and grain directly to humans do

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not understand livestock feeding or nutrition. Misinformed advocates of a non-meat diet should consider how a typical market steer utilizes low grade feedstuffs to produce meat. Under current production systems approximately 86 percent of a steer's diet consists of roughages and milk from the beef cow. During the finishing phase, this market animal will eat approximately 2,125 lb. of corn and 125 lb. of a supplement such as soybean meal. This concentrate contains about 250 lb. of protein. The market steer will yield approximately 77.5 lb. of protein.

Animal protein vs. plant protein

However, when a comparison of plant and animal protein is made, it should be recognized plant protein is incomplete and is inadequate alone to sustain human life. Meat protein is complete in that it provides all essential amino acids required in the human diet. The ratio of plant food protein that can be utilized directly by humans to the meat protein which will be eaten directly by humans is approximately 3.2 to 1. But, when differences in the utilization value of the previously mentioned 250 lb. of protein from corn and soybean meal and the 77.5 lb. of animal protein are considered, the advantages of consuming meat are evident. The ultimate amount of protein effectively utilized by the human from the 2,125 lb. of corn is only approximately 100 lb.

Approximately eight ounces of beef will provide the amount of protein an adult male requires daily. On a weight basis, this human would need to consume about 35 ounces of corn to receive an equivalent amount of nutrition. Therefore, a human would be required to eat about 2.2 lb. of corn daily to receive enough protein. This amount of corn contains approximately 3,455 calories, as compared with eight ounces of beef that has about 560 calories. The 2.2 lb. of corn compares in nutritive value with the eight ounces of beef in a 4-1 ratio. A beef animal will consume human digestible protein only in a 3.2-1 ratio to the meat protein that is produced. By adding the protein that has been "manufactured" from roughages, the protein production of the corn has been improved.

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The manufacturing efficiency of the beef animal is further recognized since approximately 44 percent of the total land area in the United States is used for production of forages and grazing. Most of this land is unsuitable for other types of farming due to topography, fertility or climate. Therefore, the ruminant animal is the most efficient source for conversion of otherwise wasted land into human foodstuffs. Even if this area could be planted entirely in a plant protein source and fed directly to humans, much of that produced would be lost in the manufacturing and refining processes essential for conversion into food suitable for consumption.

Beef needed in the diet

Cattle have helped make America great because of the highly nutritive foodstuff produced by these efficient "mini solar plants." Meat such as beef is needed in the diet because it contains many nutrients essential to life. An eminent nutritionist at Cornell University has suggested that the recommendation to cut down on eating meat and meat products is advice bordering on nutritional quackery. More nutrients per calorie are supplied by beef than most "diet" foods.

Current research has suggested consumption of beef and other meats has an insignificant effect on heart disease. It is rather hypothetical to proclaim saturated fats (which make up slightly less than half of the fat in the diet) have any effect on serum cholesterol content in the blood. It is also questionable whether serum cholesterol content of the blood is responsible for development of atherosclerosis. A well-known open-heart surgeon has stated 60 percent of the people who have arteriosclerosis do not have elevated serum cholesterol levels. No research has proven the hypothesis that lowering intake of beef or beef fat will reduce the chance of heart disease.

There is another fact in support of beef that should be recognized. Beef can be consumed without fear of the fat or lean causing cancer. Dr. Samuel Epstein, professor

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of occupational and environmental health at the University of Illinois Medical Center has previously stated there is no evidence fat causes cancer. Dr. Milton Scott, professor emeritus of nutrition at Cornell University has stated alleged link of meat consumption with cancer is a pitch that lacks credibility.

Further verification is provided by Dr. Richard Jones, director of scientific activities for the American Medical Assn. who said, "Vegetable oils in the diet have been shown to be more potent promoters of known carcinogens in the experimental animal than animal fats." This statement is supported by a five-year epidemiological study of 10,000 Swedish men recently reported in the Journal of the American Medical Assn. In this study, men with the lowest levels of fats in their blood had the highest incidence of deaths from cancer. I do not intend to suggest that polyunsaturated fats nor low fat levels in the blood cause cancer. But, I do

suggest it is conjectural to make recommendations from a mass of conflicting data and that spontaneous inferences are unscientific, misleading and dangerous.

Provide consumers with the facts

The virtues of cattle and beef that have been discussed should be shared with those consumers willing to listen to facts regarding their diet. If cattle producers, meat processors, food retailers and food scientists will collectively provide facts for the consumer, some of the confusion and incorrect information can be counteracted. This approach will permit those in the industry to improve the image and demand for beef and subsequently let the scientists do their job by providing the facts.

If you choose to be a crusader for the cause that has been mentioned, perhaps another message should be delivered. Our consumers should know that hormones administered to cattle will not affect the health of the consumer.

An example of "over kill" regarding safety of hormone use is diethylstilbestrol. This hormone was outlawed for use as a feed additive in 1979, even though it was estimated this growth stimulant was responsible for 7,700,000,000 additional pounds of beef each year. Diethylstilbestrol was outlawed because researchers found two parts per billion of this compound in some beef livers. No residue was ever detected in the skeletal muscle or fat. The two parts per billion concentration equates with two grains of sugar

in an olympic size swimming pool filled with sugar. A female would need to eat approximately 26,666 lb. of affected beef liver to receive the same amount of diethylstilbestrol as in one morning-after pill. The National Live Stock and Meat Board has reported that at the average annual rate of consumption of beef liver in this country, this task would require about 17,000 years. Their estimated cancer risk from diethylstilbestrol is less than one case in the entire U.S. population every 133 years. The consumer also needs to know that any feed substances given to livestock are approved by the government with established withdrawal periods before slaughter.

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Yes, beef is one of the most nutritious foodstuffs available. Red meat has been called the original "health food" because it provides so many natural ingredients essential to life and good health. Health and fitness are best maintained by eating a balanced diet that contains meat. During this special Angus anniversary, it is especially appropriate to commend you for producing a product that has made America great. You are a champion!

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