SECTION IX
SUMMARY AND REVIEW

BQA Guidelines
Hazard Analysis Critical Control Point-like System

Feedstuffs and Sources
• Record chemical use
• QC feed ingredients

Feed Additives and Medications
• NO Extra-Label Drug Use – Administer FDA medicated feed additives according to label and withdrawal directions
• Record medicated rations, three years
• Feed no ruminant derived protein sources

Individual Treatments
• FDA/USDA/EPA guidelines for product selection and use
• Subcutaneous if possible
• Administer all products in front of the shoulders
• Avoid tissue damaging products, 10 cc or less per intramuscular injection site

Treatment and Product Use Records
• Treatment regimes: label directions unless prescribed by a veterinarian
• Follow Extra-Label Drug Use withdrawal as set by veterinarian (valid Veterinarian/Client/Patient relationship)
• Group or Mass Treatments – Record date, person administering, animal identification, medication, dosage, location/method of administration and withdrawal
• Individual Treatments – Record date, person administering, animal identification, medication, dosage, location/method of administration and withdrawal
• Check withdrawal of all cattle shipped and sign release
• Closely check non-performing cattle (i.e. medicated market cows/bulls, etc.) prior to shipment

Recordkeeping
• All BQA records are subject to inspection by BQA program staff and/or USDA/FSIS upon request
• A signed copy of the BQA records are forwarded
• Backward information flow available

Cattle Care and Husbandry
• Keep equipment clean
• Strive to maintain the environment
• Evaluate biosecurity
Summary of BQA

Purpose:
Protect Consumer Confidence in Beef Quality and Safety

History:
The BQA program is designed for our industry, and all cattlemen ... the cattlemen are in charge! The BQA program began in 1980 and has grown to include 47 states. The development and coordination of the revitalization program has been through the Beef Council, the BQA Advisory Committee, the various veterinary medical associations and Cooperative Extension. Other states have started revitalization programs similar to the BQA program.

BQA:
The BQA program follows the guidelines set forth by the National BQA program. Two additional requirements are added to the BQA program: No extra label use of aminoglycosides or related compounds can be used as injectable medications regardless of animal's age. The BQA program stipulates NO INJECTIONS BEHIND THE SLOPE OF THE SHOULDER REGARDLESS OF ANIMALS AGE AND NEVER GIVE MORE THAN 10 CC PER INTRAMUSCULAR (IM) SITE. These guidelines are specific to the BQA program.

Program Objective:
Provide education, training, verification and documentation for all beef producers. The program is needed to follow FDA, EPA and USDA-FSIS standards (FOLLOW THE RULES), as well as BQA requirements. BQA incorporates into management objectives and into a producer's job, allowing a quality and responsible attitude to grow. Preventing small mistakes improves production efficiency.

What BQA is NOT:
Presently, it is not possible for BQA to be a food borne pathogen reduction program. The BQA utilizes Hazard Analysis Critical Control Point System. The program will allow our industry to work with HACCP-like procedures until it can be applied at the production level. Texas Cattle Feeders Association started a HACCP-like feedyard program in October 1997. They identified broken needles (physical hazards) and residues (chemical hazards) as the two controllable hazards in cattle. They were unable to identify methods of controlling bacterial hazards in cattle pre-harvest.

"Build on what you know" ... has been and continues to be the operative phrase:
While BQA is not a HACCP program, the HACCP system is a good resource/reference for the BQA program. Cattlemen, Employees, Veterinarians, Nutritionists, other Specialists must look for what could go wrong, then figure out ways to avoid having things go wrong — Build practices that allow checking and verifying, document you are accomplishing what you intended to do. Design all everyday working techniques to avoid having anything go wrong.

HACCP-like Programs: Five Preliminary Steps
Assemble the HACCP-like planning team – bring together your HACCP resources
Describe what you raise and how you distributed it
Identify who gets your cattle and how they use them
Develop and verify a process flow diagram
Meet the requirements for BMP and SOP, including sanitation SOP

Seven Specific HACCP-like Program Steps
Identify potential hazards: Biological, Chemical, and Physical (B-C-P)
Identify critical control points (CCPs)
Establish Critical Limits for each CCP
Establish CCP monitor procedure
Establish Corrective Actions
Establish verification procedures
Establish recordkeeping procedures
Who says we can’t ... WE HAVE. When BQA started in the early 80’s, chemical residues were approximately 1% – they dropped to ZERO in fed cattle for over a decade. Lesions were identified in 1991 as a target and in just 6 years, 22% went to 6%. Other targeted defects and production losses as a result of the defects include Hide= $25, Bruises= $4, Dark Cutters= $6, Injection Site Damage= $7. All are manageable defects!

Remember the BQA Basics
Recruit your BQA team: Employees, Family, Affiliate, Specialists, Experts
Take a look at what could go wrong.
What will be done when something goes wrong.
How are problems avoided.
Validate your plan.
Train and Educate ← Re-train and Re-educate.
Develop a timed checklist – then use it.
Document and double check.

IT IS SIMPLE ECONOMICS ... WE SELL PERFORMANCE ... Animal performance can be optimized only if the people managing the animal respect the ANIMAL, THEMSELVES, and the PEOPLE THEY WORK WITH. Following Best Management Practices (BMPs) improves efficiency.

Consumers buy what they trust: Confidence comes from trust ... a trust we have earned. There are few of us left and consumers don’t know us as they once did. Changes in demographics, government, media, etc. are making it even tougher and the standards required of us may seem impossible. But this is the life, the job we were entrusted with.

Beef Quality Assurance: It is up to you ... It will and it has to fit management objectives. Cattle are never to YOUNG or OLD to have a quality defect.

There are NO Most Valuable Players ⇒ BQA is Everyone’s Job.
Where do we go from here? Get involved! Get everyone involved.

BQA ⇒ Our Business ⇒ Our Future
abomasum  Fourth stomach compartment of cattle that corresponds to the true stomach of monogastric animals.

abortion  Delivery of fetus between time of conception and normal parturition.

abscess  Localized collection of pus in a cavity formed by disintegration of tissues.

accrual method of accounting  Accounting method whereby revenue and expenses are recorded when they are earned or incurred regardless of when the cash is received or paid.

accuracy or ACC (of selection)  Confidence that can be placed in the EPD (expected progeny difference); for example, high (0.70 and above), medium (0.40-0.69), and low (below 0.40).

acetonemia  See ketosis.

acidosis  A high-acid condition in the rumen (pH 5.3-5.7) caused by rapid consumption or overconsumption of readily fermentable feed; may cause digestive disturbance and/or death.

ADG  See average daily gain.

adjusted weaning weight  Weaning weight of a calf is adjusted to a standard age (205 days) and age of dam (5-9 years of age).

adjusted yearling weight  Yearling weight of a calf is adjusted to a standard age (365 days) by adding (160 times average daily post-weaning gain) to the adjusted 205-day weight (see also adjusted weaning weight).

ad lib  See ad libitum.

ad libitum (ad lib)  Free choice; allowing cattle access to all they want. Typically refers to feed and water. (e.g. fed ad lib)

afterbirth  Fetal membranes that are expelled after parturition. See also placenta.

AHIR  See Angus herd improvement records

AI  See artificial insemination.

AI certificate  A certificate issued by some breed associations that must be submitted before AI calves can be registered.

alliance  An organization in the beef industry (horizontal or vertical) designed to improve profitability by improving coordination of beef production, processing, and/or merchandising.

American Meat Institute (AMI)  Association of meat-packing and processing companies.

American National Cattlewomen (ANCW)  Organization of women involved in the promotion of beef through education and consumer relations programs.

AMI  See American Meat Institute.

amnion  Fluid-filled membrane located next to the fetus.

ANCW  See American National Cattlewomen.

anestrous  Period of time when the female is not in estrus; the nonbreeding season.

Angus Herd Improvement Records (AHIR)  Performance records program administered by the American Angus Association.

animal unit (AU)  A generalized unit for describing stocking density, stocking rate and carry capacity. Usually accepted to be a 1,000-lb cow with calf or 1.4 yearling cattle.

annual cow cost  Cost (dollars) to keep a cow for a year. Includes the value of: the amount of harvested forage fed, the number of pasture days, operating costs, fixed costs, hours of labor, herd size, percent calf crop, and weaning weight.

annual cow unit month (AUM)  Amount of feed or forage required to maintain one animal unit (see also animal unit) for one month.

ante mortem  Before death.

anthelmintic or antihelminthic  Drug or chemical agent used to kill or remove internal parasitic worms (helminths).

antibiotic  Product produced by living organisms such as yeast that destroys or inhibits the growth of other organisms, especially bacteria.

antibody  Specific protein molecule that is produced in response to a foreign protein (antigen) that has been introduced into the body.
antigen  Foreign substance that, when introduced into the blood or tissues, causes the formation of antibodies. Antigens may be a toxin or other foreign substance or may be produced within the organism such as a native protein.

appreciation  Increase in the value of a capital asset (e.g., land) due to external influences such as inflation.

arteriosclerosis  Disease resulting in the thickening and hardening of the artery walls.

artificial insemination (AI)  Placing semen into the female reproductive tract (usually the cervix or uterus) by means other than natural service.

artificial vagina  Device used to collect semen from a male while he mounts in a normal manner to copulate. The bull ejaculates into this device, which simulates the vagina of the female in pressure, temperature, and sensation to the penis.

as fed  Feeding of feeds that contain their normal amount of moisture.

assets  Items of value owned by a beef business or producer.

atherosclerosis  Form of arteriosclerosis involving fatty deposits in the inner walls of the arteries. See also arteriosclerosis.

atrophy  Shrinking or wasting away of tissue.

auction  Market for cattle through which an auctioneer sells cattle to the highest bidder.

AUM  See animal unit month.

autopsy  Post-mortem examination in which the body is dissected to determine cause of death. See also necropsy.

average daily gain  Pounds of liveweight gained per day averaged over a period of time. e.g. Total pounds gained in gain period ÷ days in gain period = average daily gain.

backcross  Mating of a two-breed crossbred offspring back to one of its parental breeds.

backfat  Amount (thickness) of fat over the animal’s back, usually measured at the twelfth to thirteenth rib.

backgrounding  Growing program, typically grazing or feeding harvested feed, for feeder cattle from time calves are weaned until they are on a finishing ration in the feedlot.

balance sheet  Financial statement that summarizes assets, liabilities, and net worth at a specific point in time. See also net worth statement.

balling gun  Instrument inserted into the animal’s throat to discharge pills.

Bang’s disease  See brucellosis.

barren  Incapable of producing offspring.

basis  Difference between the cash market price and the futures market price.

BCS  See body condition score.

BCTRC  Boneless, closely trimmed retail cuts from round, loin, rib, and chuck.

beef  Meat from cattle (bovine species) other than calves. Meat from a calf is called veal.

beefalo  Hybrid animal (potentially fertile) resulting from a cross between domestic cattle and bison resulting in 5/8 Bos taurus and 3/8 Bison bison genetics. See also cattalo.

beef belt  Area of the United States where commercial beef production, harvesting (slaughtering), and processing are concentrated.

Beef Breeds Council  National organization of beef breed associations.

Beef Checkoff program  Beef Promotion and Research Act established in October 1986. Each time cattle are marketed, $1 per head is paid by the seller to the Beef Industry Council (BIC). Money is used in promotion, research, and education. Generates approximately $70 million per year.

Beef Improvement Federation (BIF)  A federation of organizations, businesses, and individuals interested or involved in performance evaluation of beef cattle.

Beef promotion and research program  See Beef Checkoff program.

Beef Quality Assurance (BQA)  Program(s) designed to help beef producers implement good management and production methods which help prevent defects in beef products.
BIF  See Beef Improvement Federation.

bioeconomic trait  Any biological trait of economic importance.

biological efficiency  Ratio of physical input to physical output (e.g., pounds of feed per 100 lb. of gain).

biological type  Usually refers to size of cattle (large, medium, or small), growth rate, milk production (high, medium, or low), and age at puberty.

biotechnology  Use of microorganisms, plant cells, and animal cells or parts of cells (such as enzymes) to produce industrially-important products or processes.

birth weight (BW or B.Wt.)  Weight of a calf taken within 24 hours after birth.

birth weight EPD  The expected average change (increase or decrease) in birth weight (lb) of a bull’s calves when compared to other bulls in the same sire summary. A plus figure indicates an increase in birth weight, while a negative value is a decrease. The value is a measure of calving ease. See also expected progeny difference (EPD).

birth weight ratio  Compares the individual birth weight of a calf to the herd average. Usually calculated within gender.

bloat  Abnormal condition characterized by a distention of the rumen, usually seen on the left side, due to an accumulation of gases.

bloom  Haircoat usually has a luster (shine) that gives the appearance of a healthy animal.

BLUP  Best linear unbiased prediction method for estimating the breeding values of breeding animals.

body condition score (BCS)  A visual score (usually 1 = thin; 9 = very fat) for body fatness. BCS is typically related to postpartum interval in beef females and other factors such as feeding regime.

bolus  (1) Regurgitated food. (2) Large pill for treating cattle.

Bos indicus  Zebu (humped) cattle, including the Brahman breed in the United States.

Bos taurus  Includes most cattle found in the United States and their European ancestors.

bovine  Refers to a general family grouping of cattle.

bovine spongiform encephalopathy (BSE)  A degenerative disease that affects the central nervous system of cattle.

bovine viral diarrhea (BVD)  Viral disease in cattle that can cause diarrhea, lesions of the digestive tract, and repeated breeding, abortion, mummification, and congenital defects.

boxed beef  Cuts of beef put in boxes for shipping from packing plant to retailers. These primal (rounds, loins, ribs, and chucks) and subprimal cuts are intermediate cuts between the carcass and retail cuts.

BQA  See Beef Quality Assurance.

brand  (1) Permanent identification of cattle, usually made on the hide with hot-iron or freeze branding. (2) Process of branding.

branded beef product  A specifically labeled product that is differentiated from commodity items by its brand name. e.g. Certified Angus Beef, Laura’s Lean, or Cattlemen’s Collection.

breakeven price  Volume of output or price received/unit that is required for revenue to equal the total of fixed and variable expenses.

breaking  Cutting carcasses into primal and subprimal cuts.

bred  Female has been mated to a bull, usually assumed to be pregnant.

breech  A breech presentation at birth occurs when the rear portion of the fetus is presented first, either feet or buttocks first.

breed  Cattle of common origin and having characteristics that distinguish them from other groups within the same species.

breed complimentarity  Combining breeds to take advantage of breed superiority for specific traits.

breeder  In most beef breed associations, the owner of the dam of a calf at the time the dam was mated or bred to produce that calf.

breeding soundness examination (BSE)  Evaluation of the reproductive potential of the bull giving the reproductive trait; a physical examination, measuring involves scrotal circumference, and evaluating a semen sample for motility and morphology.
**breeding value**  Value of an animal as a parent. The working definition is twice the difference in performance between a very large number of progeny and the population average when individuals are mated at random within the population and all progeny are managed alike. The difference is doubled because only a sample half (one gene of each pair) is transmitted from a parent to each progeny.

**brisket disease**  Noninfectious disease of cattle characterized by congestive right heart failure. It affects animals residing at high altitudes (usually above 7,000 ft). Sometimes referred to as “high mountain disease” or “high altitude disease.”

**British breeds**  Cattle breeds originating in Great Britain. e.g. Angus, Hereford, and Shorthorn.

**brockle-faced**  White-faced with other colors splotched on the face and head.

**broken mouth**  Some teeth are missing or broken.

**broker**  Individual or firm that buys and sells options, futures contracts, and stocks and bonds for a commission fee.

**browse** (1) Woody or brushy plants (e.g., sagebrush, shadscale, and other shrubs and bushes). (2) Cattle feeding on the tender shoots or twigs of woody or brushy plants.

**brucellosis**  Contagious bacterial disease that results in abortions. See also Bang’s disease.

**BSE**  See breeding soundness examination or bovine spongiform encephalopathy.

**budget** (1) Financial form prepared in advance and used as a guide to help manage financial aspects of a beef operation. (2) Financial form used to examine alternative plans for a beef operation and to estimate the profitability of each alternative.

**bull**  Bovine male. The term usually denotes animals of breeding age.

**buller-steer syndrome**  Behavior problem in which a steer is sexually attracted to other steers in the pen. The buller steer is ridden by other steers, resulting in poor performance and potential for injury.

**bulling**  Term describing a cow or heifer in estrus being mounted by her peers.

**bullock**  Young bull, typically less than 20 months of age.

**butt-branded**  Hides from cattle that are hot-iron branded on the hip.

**buttons** (1) Cartilage on dorsal processes of the thoracic vertebrae. See also cotyledon. (2) Horn buttons (or buds) are the origination of a calf’s horns.

**BVD**  See bovine viral diarrhea.

**bypass protein**  Feed protein that escapes microbial degradation in the rumen (bypasses the rumen) and is digested in the small intestine.

**by-product or co-product**  Product of less value than the major product. For example, the hide and offal are by-products while beef is the major product.

**C-section**  See caesarean section.

**Caesarean section**  Delivery of fetus through the opening created by incisions through the abdominal and uterine walls.

**calf**  Young male or female bovine animal under 1 year of age.

**calf crop**  See percent calf crop.

**calorie**  Amount of heat required to raise the temperature of 1 g of water 1°C at Standard Temperature and Pressure.

**calve**  Giving birth to a calf. See also parturition.

**calving difficulty**  Abnormal or difficult labor, causing difficulty in delivering the calf. See also dystocia.

**calving interval**  Time (days or months) between the birth of a calf and the birth of a subsequent calf, both from the same cow.

**calving season**  Season(s) of the year when calves are born.

**cancer eye**  Cancerous growth on the eyeball or eyelid.

**carcass evaluation**  Techniques for measuring components of meat quality and quantity in carcasses.

**carcass merit**  Value of a carcass for consumption.

**carotene**  Orange pigment found in leafy plants (e.g., alfalfa), yellow corn, and other feeds that can be broken down to form two molecules of vitamin A.
carrier  Heterozygous individual having one recessive gene and one dominant gene for a given pair of genes (alleles).

carrying capacity  (1) The maximum stocking rate that will achieve a target level of animal performance on a particular grazing unit under a specified grazing method. (2) The potential number of animals or liveweight that may be supported on a unit area for a grazing season based on forage potential.

case-ready  Beef cuts received by the retailer that do not require further processing before they are put in the retail case for sale.

cash flow  Cash receipts and cash expenses.

cash-flow budget  Detailed estimate of the projected cash receipts and expenses over a future period of time used to evaluate the financial feasibility of a plan.

cash-flow statement  Financial statement summarizing all cash receipts and disbursements over a period of time (usually monthly for a year).

cash market price  Price that results when cattle are marketed.

cash method of accounting  An accounting method by which revenue and expenses are recorded when the cash is received or paid out.

castrate  (1) To remove the testicles. (2) An animal that has had its testicles removed.

cattalo  Animal resulting from a cross between domestic cattle and bison, male offspring are typically sterile. e.g. Bos taurus x Bison bison. See also beefalo.

Cattle-Fax  Not-for-profit marketing organization governed by cattle producers. Market analysis and information is provided to members by a staff of market analysts.

Cattlemen’s Beef Board (CBB)  Responsible for the management of the Beef Checkoff program, oversees the collection of $1 per head on sales of domestic cattle as well as the equivalent on imported cattle, beef, and beef products. CBB  See Cattlemen’s Beef Board.

central test  Location where animals are assembled from several herds to evaluate differences in certain performance traits under uniform management conditions. Usually involves breeding bulls, though some slaughter steer and heifer tests exist.

Certified Angus Beef  Branded-beef product supplied by Angus or Angus-crossbred cattle that meets certain carcass specifications.

cervix  Portion of the female reproductive tract between the vagina and the uterus. It is usually sealed by thick mucus except when the female is in estrus or delivering offspring.

checkoff  See Beef Checkoff program.

chorion  Outermost layer of fetal membranes.

chromosome  Rodlike or stringlike body found in the nucleus of the cell that is darkly stained by chrome dyes. The chromosome contains the genes.

chronic  Regular appearance of a symptom or situation.

chuck  Wholesale cut (shoulder) of the beef carcass.

class  Group of cattle determined primarily by sex and age (e.g., market class or show-ring class).

clitoris  A highly-sensitive organ, part of the female genitalia, located inside the ventral part of the vulva. It is homologous to the male penis.

clone  Genetically-identical organisms produced by nucleus substitution or embryo division.

closed herd  Herd in which no outside breeding stock (cattle) are introduced.

cod  Scrotal area of steer remaining after castration.

cold shortening  Sarcomeres as part of the muscle fiber, shorten too rapidly during the chilling of the carcass, thus decreasing meat tenderness.

collagen  Primary protein in connective tissue. Collagen envelops individual muscle fibers and attaches muscles to bones.

collateral relatives  Relatives of an individual that are not its ancestors or descendants. Brothers and sisters are examples of collateral relatives.

colon  Large intestine from the end of the ileum (lowest portion of small intestine) beginning with the cecum all the way to the anus.
Colorado-branded  Hides from cattle hot-iron branded on the ribs.

colostrum  First milk produced by a female following delivery of a calf. It is rich in antibodies that helps protect the newborn calf from disease-causing microorganisms.

compensatory gain  Faster-than-normal rate of gain following a period of restricted gain.

compensatory growth  See compensatory gain.

complementarity  Using breed differences to achieve a more optimum additive and non-additive breed composition for production and carcass traits of economic value.

composite breed  Breed that has been formed by crossing two or more breeds.

composition  Usually refers to the carcass composition of fat, lean, and bone.

Compudose®  Growth implant containing estradiol and progesterone.

computer  Electronic machine which by means of stored instructions and information performs rapid, often complex, calculations or compiles, correlates, and selects data.

concentrate  Feed that is high in energy content low in fiber content, and highly digestible.

conception  Fertilization of the ovum (egg).

conditioning  Treatment of cattle by vaccination and other means prior to putting them in the feedlot.

conformation  Physical form of an animal; its shape and arrangement of parts.

congenital  Acquired during prenatal life. Condition exists at birth. Often used in the context of congenital (birth) defects.

contemporaries  Group of animals of the same sex and breed (or similar breeding) that have been raised under similar environmental conditions (same management group).

continental breed  See European breed.

controlled grazing  Grazing management designed to improve utilization of forage either by 1) allocating pasture in subunits with grazing periods typically less than 5 days or 2) varying stocking rate to match forage growth rate and availability (put-and-take stocking).

cooler  A room in harvest (packing) plant where carcasses are chilled after harvest (slaughter) and prior to processing.

co-product or by-product  Product of less value than the major product. For example, the hide and offal are co-products while beef is the major product.

corpus luteum  Yellowish body in the ovary. The cells that were follicular cells develop into the corpus luteum, which secretes progesterone. It becomes yellow in color from the yellow lipids that are in the cells.

correlation coefficient  Measure of how two traits vary together. A correlation of +1.00 means that two traits will move in the same direction (either increase or decrease). A correlation of -1.00 means that as one trait increases the other decreases—a perfect negative, or inverse, relationship. A correlation of 0.00 means that as one trait increases, the other may increase or decrease—no consistent relationship. Correlation coefficients may vary between +1.00 and -1.00.

cost of gain  Total of all costs divided by the total pounds gained; usually expressed on a per-pound basis.

cotyledon  Area where the placenta and the uterine lining are in close association such that nutrients can pass to and wastes can pass from the circulation of the developing young. See also button.

cow  Sexually mature female bovine animal that has birthed at least one calf.

cow-calf operation  Management unit that maintains a breeding herd and produces weaned calves.

cow hocked  Condition in which the hocks are close together but the feet stand apart.

creep  Enclosure where calves can enter to obtain feed but cows cannot enter. This process is called creep feeding.

creep feeding  See creep.

creep grazing  The practice of allowing calves to graze areas that cows cannot access.
crest  Bulging, top part of the neck on a bull.

crossbred  Animal produced by crossing two or more breeds.

crossbreeding  Mating animals from different breeds. Utilized to take advantage of hybrid vigor (heterosis) and breed complimentarity.

cryptorchidism  Retention of one or both testicles in the abdominal cavity.

cud  Bolus of feed that cattle regurgitate for further chewing.

cull  (1) To eliminate one or more animals from the breeding herd. (2) An animal eliminated, either voluntarily or involuntarily, from the breeding herd.

currentness  Marketing term indicating how feedlots market fed cattle. If current, then feedlots market cattle on schedule. If feedlots are not current, then a backlog of cattle usually results—these cattle typically have higher slaughter weights, poorer yield grades, and usually lower prices.

custom feeding  Cattle feeders who provide facilities, labor, feed, and care as a service but they do not own the cattle.

cutability  Fat, lean, and bone composition of the beef carcass. Used interchangeably with yield grade. See also yield grades.

cutting chute  Narrow chute, where cattle go through in single file, with gates such that selected animals can be diverted into pens alongside the chute; also referred to as a sorting chute.

cwt  Abbreviation for hundredweight (100 lb).

cyling  Infers that nonpregnant females are having an estrous cycle or “cycling”.

dam  Female parent.

dark cutter  Color of the lean (muscle) in the carcass has a dark appearance, usually caused by stress (excitement) to the animal prior to harvest (slaughter).

deflation  General decrease in prices that increases the purchasing power of a dollar.

dehorn  To remove the horns (or horn bud/buttons) of an animal.

deoxyribonucleic acid (DNA)  Molecule that comprises the genetic material of animals. Genes are units of DNA. See also gene.

depreciation  Decrease in the value of an asset due to age, use, and obsolescence; the prorated expense of owning an asset.

dewclaws  Hard, horny structures above the hoof on the rear surface of the legs of cattle.

dewlap  Loose skin under the chin and neck of cattle.

digestibility  Quality of being digestible. If a high percentage of a given feed taken into the digestive tract is absorbed into the body, that feed is said to have high digestibility.

direct selling  Selling cattle from one ranch to another, from ranch to feedlot, or from feedlot to packer without an intermediate party.

disease  Any deviation from the normal state of health.

DM  See dry matter.

DNA  See deoxyribonucleic acid.

DNA markers  Areas of the genome at which differences in the DNA sequence can be visually detected. A marker locus by itself may not have a direct effect on a phenotypic trait, but it may be located close to a gene that does directly affect a trait. Markers can serve as location reference points for gene mapping and marker-assisted selection.

DNA probe  A method to determine an animal’s genotype for a particular gene or marker.

dominance  One (dominant) allele masks the effect of another (recessive) allele.

double-entry accounting  System of bookkeeping in which every transaction is recorded as a debit in one or more accounts and as a credit in one or more accounts such that the total of the debit entries equals the total of the credit entries.

double-muscling  A simple recessive trait evidenced by an enlargement of the muscles with large grooves between the muscle systems, especially noticeable in the hind leg.

drench  To give fluid by mouth.

dressed beef  Carcasses from cattle.
dressing percentage  Percentage of the live animal weight that becomes the carcass weight at harvest (slaughter). It is determined by dividing the carcass weight by the liveweight and multiplying by 100. Also referred to as yield.

drop  Body parts removed at harvest (slaughter), primarily the hide, head, shanks, and offal.

drop credit  Value of the drop.

dropped  Being born (e.g., “the calf is dropped”).

dry (cow)  Refers to a non-lactating female.

dry matter  Feed after water (moisture) has been removed (100% dry).

dystocia  Difficult birth; see calving difficulty.

ear mark  Method of permanent identification by which slits or notches are placed in the ear.

eartag  Method of identification by which a numbered, lettered, and/or colored tag is placed in the ear.

early maturity  Early puberty as the animal begins to fatten early, sometimes before desired harvest (slaughter) weight is attained.

EBV  See breeding value; expected progeny difference (EPD).

eye  See expected progeny difference.

economic efficiency  Ratio of output value to cost of input.

eye  See expected progeny difference.

economic value  The net return within a herd for making a pound or percentage change of the trait in question.

edema  Abnormal fluid accumulation in the intercellular tissue spaces of the body.

efficiency  Ratio of output to input. See also biological efficiency; economic efficiency.

80%-20% rule  Basic rule of management. Too often managers expend 80% of their efforts on “the trivial many” problems that produce only 20% of the results. Effective managers recognize that spending time (20%) on problems or situations that count most, will produce 80% of the desired results.

ejaculation  Discharge of semen from the male.

embryo  Fertilized egg in its early stages of development (undifferentiated); after body parts can be distinguished it is known as a fetus.

embryo splitting  Dividing an embryo into two or more similar parts to produce several calves from a single embryo.

embryo transfer (ET)  Transfer of fertilized egg(s) from a donor female to one or more recipient females.

Endangered Species Act (ESA)  A regulatory statute intended to protect threatened and endangered species by preserving the ecosystems on which they depend.

endocrine gland  Ductless gland that secretes a hormone into the bloodstream.

energy  Force, or power, that is used to drive a wide variety of systems. It can be used as power of mobility in animals, but most of it is used as chemical energy to drive reactions necessary to convert feed into animal products and to keep animals warm and functioning.

enterprise  Segment of the cattle business or an associated business that is isolated by accounting procedures so that its revenue and expenses can be identified.

enterprise budget  Detailed list of all estimated revenue and expenses associated with a specific enterprise.

environment  Total of all external (nongenetic) conditions that affect the well-being and performance of an animal.

Environmental Protection Agency (EPA)  Independent agency of the federal government established to protect the nation’s environment from pollution and other hazards.

enzyme  Complex protein produced by living cells that causes changes in other substances in cells without being changed itself and without becoming a part of the product.

EPA  See Environmental Protection Agency.

EPD  See expected progeny difference.

epididymis  Long, coiled tubule leading from the testis to the vas deferens.

epididymitis  Inflammation of the epididymis.
epistasis  Situation in which a gene or gene pair
masks (or controls) the expression of another non-
allelic pair of genes.

equity  See net worth.

eruption or eructation  Elimination of gas by
belching.

esophageal groove  Groove in the reticulum between
the esophagus and omasum. Directs milk consumed
by a nursing calf directly from the esophagus to the
omasum.

estrogen  Any hormone (including estradiol, estriol,
and estrone) that causes the female to express estrus
(heat) and to be receptive to the male. Estrogens
are produced by the follicle of the ovary and by the
placenta and have additional body functions.

estrous  Adjective that modifies such words as cycle.
The estrous cycle is the heat cycle, or the time from
one period of heat to the next. Estrus is the period of
heat (sexual receptivity) within the estrous cycle.

estrous synchronization  Controlling the estrous cycle
so that a high percentage of the females in the herd
express estrus at approximately the same time.

estrus  Period of mating activity (sexual receptiveness)
in the heifer or cow. Same as heat.

ET  See embryo transfer.

ethology  Study of animal behavior.

EU  See European Union.

European breed  Breed originating in European
countries other than England (these are called
British breeds); a larger dual-purpose breed such as
Charolais, Simmental, and Limousin; also called a
continental or exotic breed in the United States.

European Union  Group of European countries (25
in 2008) whose major objective is to coordinate
the development of economic activities. Previously
called The European Economic community, European
community, and Common Market.

eviserate  Removal of the internal organs during the
harvesting (slaughtering) process.

exotic breed  See European breed.

expected progeny difference (EPD)  One-half of
the breeding value of a sire or dam; the difference
in expected performance of future progeny of a
sire, when compared with that expected from future
progeny of bulls in the same sire summary.

$F_1$  Offspring resulting from the mating of a purebred
(straightbred) bull to a purebred (straightbred) female
of another breed.

fabrication  Breaking the carcass into primal,
subprimal, or retail cuts. These cuts may be boned
and trimmed of excess fat.

FAD  See foreign animal disease

fat thickness  Usually refers to the amount of fat
(thickness) that covers muscles; typically measured
at the twelfth and thirteenth rib as inches of fat over
the longissimus dorsi muscle (rib eye).

FDA  See Food and Drug Administration (FDA).

feces  Bodily wastes; excretion product from the
intestinal tract.

fed cattle  Steers and heifers that have been fed
concentrates, usually for 90-120 days in a feedlot or
until they reach a desired slaughter weight.

feed additive  Ingredient such as an antibiotic or
hormone like substance that is added to a diet to
perform a specific role.

feed bunk  Trough or container used to place feed for
cattle.

feed conversion  See feed efficiency.

feed efficiency  (1) Amount of feed required to
produce a unit of weight gain or milk. (2) Amount of
gain or milk made per unit of feed.

feed markup  Per-ton feed cost charged to the
customer by a feedyard for the cattle-feeding services
it provides.

feeder  (1) Cattle that need further feeding prior to
harvest (slaughter). (2) Producer who feeds cattle.

feeder grades  Grouping of feeder cattle to predict
the harvest (slaughter) weight endpoint to a desirable
fat-to-lean composition. Frame size and thickness
are the two criteria used to determine feeder grade.
feedlot  Enterprise in which cattle are fed grain and other concentrates, usually for 90-120 days. Feedlots range in size from less than 100-head capacity to many thousands. Also known as a feedyard.

feedyard  See feedlot.

e femininity  Well-developed secondary female sex characteristics, udder development, and refinement in head and neck.

e fertility  Capacity to initiate, sustain, and support reproduction.

fertilization  Process by which a sperm unites with an egg to produce a zygote.

e fetus  Later stages of individual development within the uterus. Generally, the new individual is regarded as an embryo during the first half of pregnancy and as a fetus during the last half.

e fill  Contents of the digestive tract.

financing  Acquiring control of assets by borrowing money.

finish  (1) Degree of fatness of an animal. (2) Completion of the last feeding phase of slaughter cattle.

finished cattle  Fed cattle whose time in the feedlot is completed, and have attained the desired goals such as weight, and are now ready for harvest (slaughter).

finishing ration  Feedlot ration, usually high in energy, that is fed during the latter part of the feeding period.

fitting  Proper feeding, grooming, and handling of an animal, usually to prepare it for the show ring.

fixed cost  Costs incurred whether or not production occurs (e.g., interest, taxes).

flehmen  Pattern of behavior expressed by the bull during sexual activity. The upper lip curls up and the bull initiates the smelling process in the vicinity of the vulva or urine.

flushing  Placing females on a high level of nutrition before breeding to decrease post-partum interval and possibly stimulate an increased conception rate.

FMD  See foot and mouth disease.

FMI  See Food Marketing Institute.

FOB (or fob)  Free on board; buyer pays freight after loading.

follicle  Blisterlike, fluid-filled structure in the ovary that contains the egg.

follicle-stimulating hormone (FSH)  Hormone produced and released by the anterior pituitary that stimulates the development of the follicle in the ovary.

Food and Drug Administration (FDA)  U.S. government agency responsible for protecting the public against impure and unsafe foods, drugs, veterinary products, biologics, and other products.

Food Marketing Institute (FMI)  National association of food retailers and wholesalers located in Washington, DC, that conducts programs of research, education, and public affairs for its members.

foot and mouth disease (FMD)  Highly-contagious disease affecting many species of livestock including cattle. This disease is of particular concern in that it can lead to loss of export markets. FMD is a foreign animal disease (FAD).

footrot  Disease of the foot in cattle.

forage  Grazed or harvested herbaceous plants that are utilized by cattle.

forage production  The total amount of dry matter produced per unit of area on an annual basis (e.g., lb/acre/year).

forb  Weedy or broad-leaf plants (unlike grasses) that serve as pasture for animals (e.g., clover, alfalfa).

Foreign animal disease (FAD)  A disease that is not present within the U.S.

forward contracting  Future delivery of a specified type and amount of product at a specified price.

founder  Nutritional ailment resulting from overeating. Lameness in front feet with excessive hoof growth usually occurs.

frame score  Score based on visual evaluation of skeletal size or by measuring hip height (from ground to top of hips). This score is related to the slaughter weights at which cattle grade Choice or have comparable amounts of fat cover over the loin eye at the twelfth to thirteenth rib.

frame size  Usually measured by frame score or estimated visually.
**freemartin** Female born twin to a bull (approximately 90% of such heifers are sterile).

**FSH** See follicle-stimulating hormone (FSH).

**full sibs** Animals having the same sire and dam.

**futures market** Electronic market through which buyers and sellers trade contracts on commodities or raw materials. Futures contracts are available for a variety of delivery months. However, delivery of actual products seldom occurs. Futures markets are used as a risk management tool or as a speculative venture.

**GATT** *(General Agreement on Tariffs and Trade)* An agreement originally negotiated in Geneva, Switzerland in 1947 among 23 countries, including the U.S., to increase international trade by reducing tariffs and other trade barriers. The agreement provides a code of conduct for international commerce and a framework for periodic multilateral negotiations on trade liberalization and expansion.

**gene** Segment of DNA in the chromosome that codes for a trait and determines how a trait will develop.

**gene map** A blueprint of the chromosomes of a species, indicating the relative order of location of genes and DNA markers.

**generation interval** Average age of the parents when the offspring are born.

**generation turnover** Length of time from one generation of animals to the next generation.

**genetic correlation** Correlation between two traits that arises because some of the same genes affect both traits. See correlation coefficient.

**genetic engineering** Changing the characteristics of an animal by altering or rearranging its DNA. It is an all-embracing term for several techniques: (1) manipulations at a cellular level (cloning); (2) manipulation of the DNA itself (gene manipulation); (3) changing the DNA sequence through the selection and mating of cattle.

**genome** Total number of genes in a species.

**genotype** Genetic constitution or makeup of an individual. For any pair of alleles, three genotypes (e.g., AA, Aa, and aa) are possible.

**genotype–environmental interaction** Variation in the relative performance of different genotypes from one environment to another. For example, the superior cattle (genotypes) for one environment may not be superior for another environment.

**gestation** Time elapsing from conception until the female gives birth, an average of 285 days in cattle.

**goal** Target or desired condition that motivates the decision maker.

**gonad** Testis of the male; ovary of the female.

**gonadotrophin** Hormone that stimulates the gonads.

**grade augmentation** Supplementation of traditional USDA visual carcass grading using objective instrumentation.

**grade and yield** Marketing transaction whereby payment is made on the basis of carcass weight and quality grade.

**grading up** Continued use of purebred sires of the same breed in a grade herd.

**grass tetany** Disease of cattle marked by staggering, convulsions, coma, and frequently death that is caused by a mineral imbalance (magnesium). Typically occurs while grazing lush pasture.

**grazer** A person who manages grazing livestock.

**grazing cell** A parcel of land subdivided into paddocks and rotationally grazed.

**grazing cycle** The length or passage of time between two grazing periods in a particular paddock of a grazing unit. One grazing cycle includes one grazing period and one rest period.

**gross margin** Difference between the revenue and variable production cost for one unit (one acre or one animal) of an enterprise.

**growing ration** Usually a high-roughage ration whereby gains of 0.25-2.0 lb per day are anticipated.

**growth** Increase in mass (particularly protein) over loss in the animal body. Growth occurs by increases in cell numbers, cell size, or both.

**grubs** Larvae of the heel fly found under the hide on the backs of cattle.
half-sibs  Animals having one common parent.

hand mating or hand breeding  Bringing a female to a male for breeding, after which she is removed from the area where the male is located.

hanging tender  Part of the diaphragm muscle, not to be confused with the tenderloin of the carcass.

hard keeper  Term used when an animal does not perform well; it may have hardware, parasites, or show the effects of other disease.

hardware disease  Ingested sharp objects perforate the reticulum and cause infection of the heart sac, lungs, and/or abdominal cavity.

Hazard Analysis Critical Control Point (HACCP)  A process used to identify those steps in production where mistakes may critically damage the final performance of the product and to establish a system of monitoring and intervention to avoid these mistakes.

heart girth  Circumference of the animal’s body, measured just behind the shoulders.

heat  See estrus.

heat increment  Increase in heat production following consumption of feed when an animal is in a thermoneutral environment. It includes additional heat generated during fermentation, digestion, and nutrient metabolism.

hedge  Risk management strategy that allows a producer to lock in a price for a given commodity at a specified time.

heifer  Young female bovine cow prior to the time that she has produced her first calf.

heiferette  Heifer that has calved once and is then fed for harvest (slaughter); the calf has usually died or been weaned at an early age.

herd  Group of cattle (usually cows) that are in a similar management program.

heredity  Transmission of genetic or physical traits of parents to their offspring.

heritability  Proportion of the phenotypic differences between animals that is due to heredity.

hernia  Protrusion of an intestine through an opening in the body wall (also commonly called rupture) but remain contained within the body by the animal's skin. Two types of hernias—umbilical and scrotal—occur in cattle.

heterosis  Performance of offspring that is greater than the average of the parents. Usually referred to as the amount of superiority of the crossbred over the average of the parental breeds. Also called hybrid vigor.

heterozygous  Designates an individual possessing unlike genes for a particular trait.

hides  Skins from cattle.

high mountain disease  See brisket disease.

hiplock  Condition at calving in which the hips of the calf cannot pass through the pelvis of the cow.

homozygous  Designates an individual whose genes for a particular trait are alike.

hormone  Chemical substance secreted by a ductless gland. Usually carried by the bloodstream to other places in the body, where it has its specific effect on another organ.

hot carcass weight  Weight of carcass just prior to chilling.

“hot fat trimming”  Removal of excess surface fat while the carcass is still “hot,” prior to chilling the carcass.

HRI (hotel, restaurant, and institutional)  Used in the context that some beef is supplied to the HRI trade.

hybrid vigor  See heterosis.

hydrocephalus  Condition characterized by an abnormal increase in the amount of cerebral fluid, accompanied by dilation of the cerebral ventricles.

hypothalamus  Portion of the brain found in the floor of the third ventricle that regulates reproduction, hunger, and body temperature and performs other functions.

immunity  Ability of an animal to avoid, resist, tolerate, or overcome infection.

implant  To graft or insert material to intact tissues.

inbreeding  Mating of individuals more closely related than the average individuals in a population. Inbreeding increases homozygosity in the cattle population but does not change gene frequency.
income  Difference between revenue and expenses that is referred to as net income; gross income refers to total income.

income statement  Financial statement that summarizes all revenues and expenses and used to determine the net income or net loss for a given period of time, usually a year.

independent culling level  Selection method whereby minimum acceptable phenotypic levels are assigned to several traits.

index  Overall merit rating of an animal.

inflation  General increase in prices that decreases the purchasing power of a dollar.

insemination  Deposition of semen in the female reproductive tract.

intake  The amount of feed consumed by an animal per day. Intake is usually expressed as a percent of bodyweight or in pounds per day.

integrated resource management (IRM)  Multidisciplinary approach to managing cattle more efficiently and profitably; management decisions are based on how all resources are affected.

integration  Bringing together of two or more segments of beef production and processing under one centrally organized unit.

intensive grazing management (IGM)  Grazing management where a grazing unit is subdivided into subunits (paddocks) with grazing periods typically less than 5 days.

intensive rotational grazing  Synonymous with “intensive grazing management.”

interest rate  Charge or fee associated with borrowed money.

intermuscular fat  Fat located between muscle systems. See also seam fat.

intramuscular fat  Fat within the muscle, see also marbling.

inter se mating  Mating of animals within a defined population. Literally to mate among themselves.

intravenous  Within the vein. An intravenous injection is made into a vein.

in vitro  Outside the living body; in a test tube or artificial environment.

in vivo  Within the living body.

involution  Return of an organ to its normal size or condition after being enlarged (e.g., the uterus after parturition). A decline in size or activity of other tissues; the mammary gland tissues normally involute with advancing lactation.

ionophore  Ionophores (such as monensin, lasalocid, laudomycin, salinomycin and narasin) are antimicrobial compounds that are commonly fed to ruminant animals to improve feed efficiency. These antimicrobials specifically target the ruminal bacterial population and alter the microbial ecology, resulting in increased carbon and nitrogen retention by the animal, increasing production efficiency.

IRM  See integrated resource management.

joint venture  Any business arrangement whereby two or more parties contribute resources to and engage in a specific business undertaking.

kidney knob  The kidney and the fat that surrounds it.

kidney, pelvic and heart fat (KPH)  The internal carcass fat associated with the kidney, pelvic cavity and heart expressed as a percentage of chilled carcass weight. The kidney is included in the estimate of kidney fat. Used in the calculation of yield grade.

ketosis  Condition characterized by a high concentration of ketone bodies in the body tissues and fluids. Also called acetonemia.

kosher meat  Meat from ruminant animals (with split hooves) that have been harvested (slaughtered) according to Jewish law.

labor  (1) Parturition or the birth process, (2) Resource that produces goods or provides services.

lactation  Production and secretion of milk.

LEA  See loin-eye area (LEA); rib-eye area (REA).

lethal gene  A gene that causes the death of an individual at some stage of life, pre- or post-parturition.

legume  Any plant type within the family Leguminosae, such as pea, bean, alfalfa, and clover.
leucocytes  White blood cells.

LH  See luteinizing hormone (LH).

liabilities  Obligations or debts owed by a business or person to others.

libido  Sex drive or the male’s desire to mate.

lice  Small, flat, wingless insects with sucking mouth parts that are parasitic on the skin of animals.

limited partnership  Partnership consisting of at least one general partner, who is responsible for the management and liabilities of the business, and at least one limited partner, whose liability is limited to his or her investment.

linear programming  Mathematical technique used to find profit-maximizing combinations of production activities or cost-minimizing combinations of ingredients subject to a number of linear relationships that constrain the activities or ingredients.

linebreeding  Form of inbreeding whereby a bull’s genes are concentrated in a herd. The average relationship of the individuals in the herd to this ancestor (outstanding individual or individuals) is increased by linebreeding.

linecrossing  Crossing of inbred lines.

liquidate  To convert to cash; to sell.

lousy  Infested with lice.

luteinizing hormone (LH)  Protein hormone produced and released by the anterior pituitary that stimulates the formation and retention of the corpus luteum. It also initiates ovulation.

maintenance  Condition in which the body is maintained without an increase or decrease in body weight and with no production or work being done.

mammary gland  Gland that secretes milk.

management  Act, art, or manner of managing, handling, controlling, or directing a resource or integrating several resources.

management systems  Methods of systematically organizing information from several resources to make effective management decisions. See also integrated resource management.

marbling  Flecks of intramuscular fat distributed in muscle tissue. Marbling is usually evaluated in the rib-eye between the twelfth and thirteenth ribs and is a key determinant in evaluating Quality Grade.

MARC  See Meat Animal Research Center.

margin  (1) “Earnest money” that serves as default protection in a futures transaction. (2) Difference between prices at different levels of the marketing system. (3) Difference between cost and sale price.

marker-assisted selection  A method of genetic evaluation which takes into consideration the DNA marker genotype along with conventional selection procedures.

market class  Cattle grouped according the their use, such as slaughter, feeder, or stocker.

market grade  Cattle grouped within a market class according to their value.

market niche  Segment of consumer demand targeted by a specialized production and marketing plant. Examples include the “white tablecloth” restaurant trade, health foods, and convenience foods.

masculinity  Well-developed secondary sex characteristics in the neck, chest, and shoulders of the bull.

masticate  To chew feed.

mastitis  Inflammation of the mammary gland.
maternal Pertaining to the female (cow or heifer).

maternal first-calf calving ease Ease with which a sire’s daughters calve as first-calf heifers (under 33 months of age). Reported as a ratio or an EPD.

maternal heterosis Heterosis for those traits influenced by the cow genotype. e.g. maternal heterosis of weaning weight refers to the increase in weaning weight from being raised on a crossbred cow rather than a straightbred cow.

maternal traits All of the traits expressed by the cow. A limited definition implies milk and weaning weight production of the cow.

maternal weaning weight Weaning weight of a bull’s daughter’s calves. The EPD value predicts the difference in average 205-day weight of a bull’s daughter’s calves compared to daughters of all other bulls evaluated. It can be calculated by adding one-half of the bull’s EPD for weaning weight to his milk EPD.

maturity An estimation of the chronological age of the animal or carcass.

maverick Unbranded animal, usually on the range.

M/B or M:B ratio See muscle-to-bone ratio.

mean (1) Statistical term for average. (2) Term used to describe cattle having bad behavior.

meat Tissues of the animal body that are used for food.

Meat Animal Research Center (MARC) U.S. government research center located in Clay Center, NE, that conducts numerous beef cattle research projects.


MEF See U.S. Meat Export Federation.

melengestrol acetate (MGA) Feed additive that suppresses estrus in heifers; used in estrus synchronization and feedyard heifers.

MERCOSUR (Common Market of the South) A customs union implemented in January 1995, and including Argentina, Brazil, Paraguay, and Uruguay. MERCOSUR represents the culmination of bilateral negotiations started by Argentina and Brazil in 1986.

metabolic body size Weight of the animal raised to the 3/4-power ($W^{0.75}$); a figure indicative of metabolic needs and of the feed required to maintain a certain body weight.

metabolism (1) Sum total of chemical changes in the body, including the “building up” and “breaking down” processes. (2) Transformation by which energy is made available for body uses.

metabolizalbe energy Gross energy in the feed minus the sum of energy in the feces, gaseous products of digestion, and energy in the urine. Energy that is made available for body uses.

metritis Inflammation of the uterus. Infection of uterus.

MGA See melengestrol acetate (MGA).

middle meats Rib and loin of a beef carcass. These primals generally yield the highest-priced beef cuts.

milk EPD Estimate of the milking ability of a bull’s daughters compared to the average of the daughters of other bulls. Reported in pounds of weaning weight; positive values indicate above-average performance and negative numbers indicate below-average maternal ability. See also expected progeny difference.

mill feed Any feed that is subjected to the milling process.

minimum culling level Selection method in which an animal must meet minimum standards for each trait desired in order to qualify for being retained for breeding purposes.

mites Very small arachnids that can be parasites of cattle.

morbidty Measurement of illness; morbidity rate is the number of individuals in a group that become ill during a specified time period.

mortality rate Number of individuals that die from a disease during a specified time period, usually 1 year.

most probable producing ability (MPPA) Estimate of a cow’s future productivity for a trait (such as progeny weaning weight ratio) based on her past productivity. For example, a cow’s MPPA for weaning weight is calculated from the cow’s average progeny weight ratio, the number of her progeny weaning records, and the repeatability of weaning weight.
mouthed Examination of an animal’s teeth.

MPPA See most probable producing ability (MPPA).

muley Term used to describe the polled (hornless) condition.

muscle-to-bone (M/B) ratio Pounds of muscle divided by pounds of bone. For example, 4:1 ratio means that there is 4 lb of muscle to 1 lb of bone (usually on a carcass basis).

muscling Amount of lean meat in a slaughter animal or carcass. Estimated on the live animal by thickness of forearm muscle or stifle thickness. Ultimately it is the ratio of muscle to bone or lean yield of the carcass after fat and bone are removed.

muzzle Nose of cattle.

myofibrils Primary component part of muscle fibers.


National Cattlemen’s Beef Association (NCBA) National organization for cattle breeders, producers, feeders, and affiliated organizations with offices in Centennial, CO, Chicago, IL, and Washington, DC. Previously known as the National Cattlemen’s Association or NCA.

National Live Stock and Meat Board (NLSMB) Organization located in Chicago that provides nutrition, research, education, and promotional information on beef, pork, and lamb. See also Beef Industry Council.

national sire evaluation Programs of sire evaluation conducted by breed associations to compare sires on a progeny-test basis. Carefully conducted national reference sire evaluation programs give unbiased estimates of expected progeny differences. Sire evaluations based on field data rely on large number of progeny per sire to compensate for possible favoritism or bias for sires within herds.

native hides Hides from cattle that have not been hot-iron branded.

natural beef Refers to beef from cattle that have not been provided growth stimulants or antibiotics.

natural fleshing Lean meat or muscle.

navel Area where the umbilical cord was formerly attached to the body of the animal.

NCBA See National Cattlemen’s Beef Association.

necropsy To perform a post-mortem examination. See also autopsy.

NEg Net energy for gain.

NEI Net energy for lactation.

NEm Net energy for maintenance.

net energy Metabolizable energy minus heat increment, or the energy available to the animal for maintenance and production.

net income Total revenue earned minus expenses incurred for a given period of time.

net worth (equity) Represents the owner’s claim on the assets of a business: net worth = assets - liabilities.

net worth statement See balance sheet.

nickling Way in which certain lines, strains, or breeds perform when mated together. When outstanding offspring result, the parents are said to have nicked well.

nipple See teat.

NPN (nonprotein nitrogen) Nitrogen in feeds from substances such as urea and amino acids, but not from preformed proteins.

nutrient (1) Substance that nourishes the metabolic processes of the body. (2) End product of digestion.

nutrient density Amount of essential nutrients relative to the number of calories in a given amount of food.

obesity Excessive accumulation of body fat.

offal All organs and tissues removed from inside the animal during the harvesting (slaughtering) process.

off feed Animal refuses to eat or consumes only small amounts of feed.

omasum The third of four stomach compartments of cattle, the omasum contains many folds.

on full feed Refers to cattle that are receiving all the feed they will consume. See also ad libitum.
**open** Refers to nonpregnant females.

**operating expenses** Expenses incurred in the usual production cycle, such as seed, fuel, feed, and hired labor costs.

**opportunity cost** Cost of using a resource based on what it could have earned using it in the next best alternative use.

**optimize** To make as effective as possible.

**optimum** Amount or degree of something that is most favorable to some end (e.g., the best combination of resources associated with cattle production yields the highest sustainable net return).

**optimum level of performance** Performance level of a trait or traits that maximizes net profit. Resources are managed (including a balance of traits) that sustain high levels of profitability.

**outbreeding** Process of continuously mating females of the herd to unrelated males of the same breed.

**outcrossing** Mating of an individual to another in the same breed that is not related to it. Outcrossing is a type of outbreeding.

**ova** Plural of ovum, meaning eggs. See also ovum.

**ovary** Female reproductive organ in which the eggs are formed and progesterone and estrogenic hormones are produced.

**overhead** Expenses incurred in the operation of the business that cannot conveniently be attributed to the production of specific commodities or services.

**ovulation** Shedding or release of the egg from the follicle of the ovary.

**ovum** Egg produced by a female.

**packing plant** Facility in which cattle are harvested (slaughtered) and processed to some degree.

**paddock** A pasture subdivision within a grazing unit.

**palatability** Degree to which food (e.g., beef) is acceptable to the taste or sufficiently agreeable in flavor, juiciness and tenderness to be eaten.

**palpation** Feeling or examining by hand (e.g., the reproductive tract is palpated for reproductive soundness or pregnancy diagnosis).

**parasite** Organism that lives a part of its life cycle in or on, and at the expense of, another organism. Parasites of farm animals live at the expense of the animals.

**parity** Number of different times a female has had offspring.

**parrot mouth** Upper jaw is longer than the lower jaw.

**partial budget** Budget that includes only those revenue and expense items that would change as a result of a proposed change in the business.

**parturition** Process of giving birth.

**pasture rotation** Rotation of animals from one pasture to another so that some pasture areas have no livestock grazing on them during certain periods of time.

**patchy** Uneven fat accumulations, usually lumps of exterior fat around the tailhead and pin bones.

**paternal** Refers to the sire or bull.

**pathogen** Biologic agent (e.g., bacteria, virus, protozoa, nematode) that may produce disease or illness.

**paunch** See rumen.

**paunchy** Heavy middled.

**pay weight** Actual weight for which payment is made. In many cases, it is the shrunk weight (actual weight - pencil shrink).

**pedigree** Records of the ancestry of an animal.

**pelvic area** Size of pelvic opening determined by measuring pelvic width and length and used to predict calving difficulty.

**pen rider** Person who rides through feedyard pens and checks cattle.

**pencil shrink** Deduction from an animal’s weight, often expressed as a percentage of liveweight, to account for fill (usually 3% for off-pasture weights and 4% for fed-cattle weights).

**pendulous** Hanging loosely.

**percent calf crop** The percentage of calves produced within a herd in a given year relative to the number of cows and heifers exposed to breeding.
per capita  Per person.

performance data  Records on individual animal’s reproduction, production, and possibly carcass merit. Traits included are birth, weaning, and yearling weights; calving ease; calving interval; milk production; and others.

performance pedigree  Includes the performance records of ancestors, half- and full sibs, and progeny in addition to the usual ancestral pedigree information. The performance information is systematically combined to list estimated breeding values on the pedigrees by some breed associations.

performance test  Evaluation of an animal according to its performance.

pharmaceutical  Medicinal drug.

phenotype  Characteristics of an animal that can be seen and (or) measured (e.g., color, weight, or presence or absence of horns).

phenotypic correlations  Correlations between two traits caused by both genetic and environmental influences. See correlation coefficient.

pheromones  Chemical substances that attract the opposite sex.

photoperiod  Time period when light is present.

pituitary  Small endocrine gland located at the base of the brain.

placenta  Membranes that form around the embryo and attach to the uterus. See also afterbirth.

Plains states  Includes Texas, Oklahoma, Kansas, Nebraska, South Dakota, and North Dakota and the eastern parts of New Mexico, Colorado, Wyoming, and Montana; often referred to as the “Beef Belt.”

pluck  Organs of the thoracic cavity (e.g., heart and lungs).

pneumonia  Inflammation or infection of alveoli of the lungs caused by either bacteria or viruses.

polled  Naturally or genetically hornless.

pons  Accumulation of fat over pin bones.

portion-controlled beef products  Retail cuts of beef that meet size and form specifications.

postnatal  See postpartum.

postpartum  After birth.

postpartum interval  Days from calving until the cow returns to estrus, or days from calving until cow is pregnant again.

pounds of retail cuts per day of age  A measure of cutability and growth combined; it is calculated as follows: cutability times carcass weight divided by age in days.

pounds of calf weaned per cow exposed  Calculated by multiplying percent calf crop by the average weaning weight of calves.

preconditioning  Preparation of feeder calves for marketing and shipment; may include vaccinations, castration, and training calves to eat and drink in pens.

prenatal  Prior to being born; before birth.

prepotent  Ability of a parent to transmit its characteristics to its offspring so that they resemble that parent, or each other, more than usual. Homozygous dominant individuals are prepotent. Also, inbred cattle tend to be more prepotent than outbred cattle.

price cycle  Traditional or historic changes in prices (usually by months, seasons, or years).

price discovery  Process that shows how the specific price for a given quantity and quality of beef is determined.

primal cuts  Wholesale cuts—round, loin, flank, rib, chuck, brisket, plate, and shank.

production testing  Evaluation of an animal based on its production record.

progeny  Offspring of the parents.

progeny testing  Evaluation of an animal based on the performance of its offspring.

progesterone  Hormone produced by the corpus luteum that stimulates progestational proliferation in the uterus of the female.

prolapse  Abnormal protrusion of part of an organ, such as the uterus or rectum.

prostaglandins  Chemical mediators that control many physiological and biochemical functions in the body. One prostaglandin, PGF$_{2\alpha}$, can be used to synchronize estrus.
prostate  Gland of the male reproductive tract located just behind the bladder that secretes a fluid that becomes a part of semen at ejaculation.

protein  Substance made up of amino acids that contains approximately 16% nitrogen (based on molecular weight).

protein supplement  Any dietary component containing a high concentration (at least 25%) of protein.

puberty  Age at which the reproductive organs become functionally operative.

purebred  Animal eligible for registry with a recognized breed association.

purveyor  Firm that purchases beef (usually from a packer), then performs some fabrication before selling the beef to another firm.

qualitative traits  Those in which there is a sharp distinction between phenotypes (e.g., red or black color). Usually, only one or two gene pairs are involved.

quality  (1) Something special about an object that makes it what it is; a characteristic, attribute, excellence. (2) The composite or attribute of an animal or product that has economic or aesthetic value to the user; meeting or exceeding each customer's expectations at a cost that represents value to the customer every time.

quality grades  Grades such as Prime, Choice, and Select that group slaughter cattle and carcasses into value- and palatability-based categories. Grades are determined primarily by marbling and age of animal.

quantitative traits  Those in which there is no sharp distinction between phenotypes, with a gradual variation from one phenotype to another (such as weaning weight). Usually, many gene pairs are involved, as well as environmental influences.

Ralgro®  Growth implant containing zeranol (a fermentation product exhibiting estrogenic activity).

random mating  System of mating whereby every female (cow and/or heifer) has an equal or random chance of being assigned to any bull used for breeding in a particular breeding season. Random mating is required for accurate progeny tests.

ration  Feed fed to an animal during a 24-hour period.

REA  See rib-eye area.

reach  See selection differential.

realizer  Feedyard animal that is removed before the end of the feeding program. Only part of the animal's potential value is realized because of disease, injury, or other issue contributing to the animal's removal.

recessive gene  A gene that has its phenotypic expression masked by its dominant allele when the two genes are present together in an individual.

rectal prolapse  Protrusion of part of the large intestine through the anus.

red meat  Meat from cattle, sheep, swine, and goats. See also white meat.

reference sire  Bull designated to be used as a benchmark in progeny testing other bulls (young sires). Progeny by reference sires in several herds enables comparisons to be made between bulls not producing progeny in the same herd(s).

registered  Recorded in the herdbook of a breed.

regurgitate  To cast up undigested food to the mouth as is done by ruminants.

replacement heifers  Heifers, usually between 6 months and 16 months of age, that have been selected to replace cows in the breeding herd.

replacements  Cattle that are going into feedyards or breeding herds to replace those being sold or that have died. See also replacement heifers.

reproductive tract score  Numerical score based on palpation of the heifer's reproductive tract (1 = not cycling; 5 = heifer cycling).

resource  Input or factor used in production, such as cattle, labor, or land.

retail cuts  Cuts of beef in sizes that are purchased by the consumer.

retained ownership  Usually refers to cow-calf producers maintaining ownership of their cattle through the feedlot.

retained placenta  Fetal membranes (afterbirth) are not expelled through the reproductive tract within the normal length of time following calving.
reticulum  One of the stomach components of cattle that is lined with small compartments giving a honeycomb appearance.

Revalor®  Growth implant containing estradiol and trenbolone acetate used in calves (Revalor-G®), feeder steers (Revalor-IS®), (Revalor-S®), and (Revalor-200®), and feeder heifers (Revalor-IH®), (Revalor-H®), and (Revalor-200®).

rib-eye area (REA)  Area of the longissimus dorsi muscle, measured in square inches, between the twelfth and thirteenth ribs. Also referred to as the loin-eye area.

rib-eye area per cwt carcass wt  Rib-eye area divided by carcass weight.

risk  Possibility of suffering economic loss. Sources of risk include climate, disease, and changes in the marketplace.

risk management  Managing risks in ways that allow a desired outcome to be achieved.

rotational crossbreeding  Systems of crossing two or more breeds whereby the crossbred females are bred to bulls of the breed contributing the least genes to the females’ genotype.

roughage  Feed that is high in fiber, low in digestible nutrients, and low in energy (e.g., hay, straw, silage, and pasture).

rugged  Big and strong in appearance; usually heavy boned.

rumen  The first of four compartments of the ruminant stomach. The rumen is similar to a large fermentation pouch where bacteria and protozoa break down fibrous plant material swallowed by the animal. Sometimes referred to as the paunch.

ruminant  Mammal whose stomach has four parts—rumen, reticulum, omasum, and abomasum. Cattle, sheep, goats, deer, and elk are ruminants.

rumination  Regurgitation of undigested food that is chewed and then swallowed again.

scale  (1) Size of cattle. (2) Equipment on which an animal is weighed.

scours  Diarrhea; profuse watery discharge from the intestines.

scrotal circumference  Measure of testes size obtained by measuring the distance around the testicles in the scrotum with a circular tape. Related to the bull’s semen-producing capacity and age at puberty of his daughters.

scrotum  Pouch that contains the testicles. Also a thermoregulatory organ that contracts when cold and relaxes when warm, thus tending to keep the testes at a lower temperature than that of the body.

scurs  Small growths of hornlike tissue attached to the skin of polled or dehorned animals.

seam fat  See intermuscular fat.

seedstock  Breeding animals. Sometimes used interchangeably with purebred.

seedstock breeders  Producers of breeding stock for purebred and commercial breeders.

Select  USDA carcass quality grade between Choice and Standard. It replaced the Good grade in 1988.

selection  Differential reproduction (e.g., a bull or cow may leave several, one, or no offspring in a herd).

selection differential (reach)  Difference between the average for a trait in selected animals and the average of the group from which they come. Also called reach.

selection index  Formula that combines performance records from several traits or different measurements of the same trait into a single value for each animal. A selection index combines traits after balancing their relative net economic importance, their heritabilities, and the genetic association among the traits.

self-management  Managing oneself as part of human resource management (e.g., time management, information management, self-motivation, honesty).

semen  Fluid containing sperm that is ejaculated by the male. Secretions from the seminal vesicles, prostate gland, bulbourethral glands, and urethral glands provide most of the fluid.

seminal vesicles  Accessory sex glands of the male that provide a portion of the fluid of semen.

served  Female is bred but not guaranteed pregnant.

service  To breed or mate.

settle  To become pregnant.
**shipping fever**  Respiratory disease of cattle, often of bacterial origin and occurring following shipping.

**short yearling**  Animal is over 1 year of age but under 18 months of age.

**show list or show pens**  Slaughter cattle that are ready for the cattle feeder to “show” the packer buyers.

**shrink**  Loss of weight; commonly used in the loss of liveweight when animals are marketed.

**sib**  Brother or sister.

**sick pen**  Isolated pen in a feedyard where cattle are treated after they have been removed from a feedyard pen. Sometimes referred to as a hospital pen or treatment and recovery pen.

**sickle hocked**  Hocks that have too much set, causing the hind feet to be too far forward and too far under the animal.

**silage**  Forage, corn fodder, or sorghum preserved by fermentation that produces acids similar to the acids used to make pickled foods for people.

**sire**  Male parent.

**sire summary**  Published results of national sire evaluation programs that give EPDs and accuracies for several economically important traits. Several major breed associations publish their own sire summaries.

**size**  Usually refers to weight, sometimes to height.

**skins**  See hides.

**skirt**  Diaphragm muscle in the beef carcass.

**software**  Program instructions to make computer hardware function.

**sonoray**  See ultrasound.

**soundness**  Degree of freedom from injury or defect.

**SPA**  See Standard Performance Analysis.

**spay**  To remove the ovaries. Ovariectomizing, female castration.

**sperm**  A mature male germ cell.

**specifications**  A detailed description, with numerical designations, of animal performance or product quantity.

**spermatogenesis**  Process of spermatozoa formation.

**splay footed**  See toeing out.

**stag**  Castrated male that has reached sexual maturity prior to castration.

**standard deviation**  For traits having a normal distribution characterized by a bell shaped curve, 68% of the population = mean (average) ± 1 standard deviation, 95% = mean ± 2 standard deviations, and 99% = mean ± 3 standard deviations.

**Standard Performance Analysis (SPA)**  Program to determine the unit cost of production for the cow-calf enterprise.

**steer**  Bovine male castrated prior to puberty.

**sterility**  Inability to produce offspring.

**stifle**  Joint of the hind leg between the femur and tibia.

**stifled**  Injury of the stifle joint.

**stillborn**  Offspring born dead without having taken a breath.

**stocker**  Weaned cattle that are fed high-roughage diets (including grazing) before going into the feedyard.

**stocking rate**  The number of animals, animal units or total animal liveweight assigned to a grazing unit for an extended period of time. Stocking rates are usually expressed on a per-acre basis.

**stocking density**  The number of animals, animal units or total animal liveweight present at a particular point in time on a defined area (paddock). Stocking density is usually defined on a per-acre basis.

**stockpiling**  The practice of allowing forage to accumulate for grazing at a later date. Most commonly done with late summer and fall forage growth for fall and/or winter grazing.

**strip grazing**  The practice of dividing a larger pasture into strips with movable fences to control grazing access.

**straightbred**  Animal whose parentage has been from one breed.
**stress** Unusual or abnormal influence causing a change in an animal’s function, structure, or behavior.

**subcutaneous** Situated beneath, or occurring beneath, the skin. A subcutaneous injection is an injection made under the skin.

**subprimal cuts** Smaller-than-primal cuts, such as when the primal round is split into top round, bottom round, eye round, and sirloin tip. Subprimal cuts are used in boxed beef programs.

**success** Progressive realization of predetermined, worthwhile goals that are based on true principles.

**suckling gain** Gain that a young animal makes from birth until it is weaned.

**superovulation** Hormonally-induced ovulation in which a greater-than-normal number of eggs are typically produced.

**sweetbread** Edible by-product also known as the thymus gland.

**switch** Tuft of long hair at the end of the tail.

**syndactyly** Union of two or more digits; for example, in cattle the two toes would be a solid hoof.

**Synovex®** Growth implant containing estradiol and progesterone used in calves (Synovex-C®), feeder steers (Synovex-S®), and estradiol and testosterone propionate used in feeder heifers (Synovex-H®).

**synthetic breeds** See composite breed.

**systems analysis** See management systems.

**tariff** A tax imposed by a government on commodity imports. A tariff may be either a fixed charge per unit of product imported (specific tariff) or a fixed percentage of value (ad valorem tariff).

**tagging** Usually refers to putting ear tags in the ear.

**tandem selection** Selection for one trait for a given period of time followed by selection for a second trait and continuing in this way until all important traits are selected.

**TDN** See total digestible nutrients.

**teat** Protuberance of the udder through which milk flows.

**terminal crossbreeding** See terminal sires.

**terminal market** Large livestock collection center where an independent organization serves as a selling agent for the livestock owner.

**terminal sires** Sires used in a crossbreeding system in which all their progeny, both male and female, are marketed. For example, crossbreed dams could be bred to sires of a third breed and all calves marketed. Although this system allows maximum heterosis and complementary of breeds, replacement females must come from other herds.

**testicle** Male sex gland that produces sperm and testosterone.

**testosterone** Male sex hormone that stimulates the accessory sex glands, causes the male sex drive, and results in the development of masculine characteristics.

**tie** Depression or dimple in the back of cattle caused by an adhesion of the hide to the backbone.

**time management** Manner in which time is utilized to achieve specific goals.

**toeing in** Toes of front feet turn in. Also called pigeon toed.

**toeing out** Toes of front feet turn out. Also called splay footed.

**total digestive nutrients (TDN)** Sum of digestible protein, nitrogen-free extract, fiber, and fat (multiplied by 2.25).

**trait ratio** Expression of an animal’s performance for a particular trait relative to the herd or contemporary group average. It is usually calculated for most traits as:

\[
\text{Trait Ratio} = \frac{\text{Individual record}}{\text{Average of animal in group}} \times 100
\]

**transgenic** An organism or animal whose genome includes “foreign” genetic material. Foreign genetic material would be a DNA sequence or gene that does not normally occur in the species of the host organism or animal.

**tray-ready beef** Retail cuts that are cut and packaged at the packing plant for retail sales; also referred to as case-ready.

**tripie** Edible product from the walls of the ruminant stomach.

**twist** Vertical measurement from the top of the rump to the point where the hind legs separate.
**type**  (1) Physical conformation of an animal. (2) All physical attributes that contribute to the value of an animal for a specific purpose.

**udder**  Encased group of mammary glands of the female.

**ultrasound**  Using high-frequency sound waves to show visual outlines of internal body structures (e.g., fat thickness, rib-eye area, and pregnancy can be predicted). The machine sends sound waves into the animal and records these waves as they bounce off the tissues. Different wavelengths are recorded for fat and lean.

**umbilical cord**  Cord through which arteries and veins travel from the fetus to and from the placenta, respectively. This cord is broken when the young are born.

**uncoupling**  Term used to consider separating quality grading and yield grading.

**unsoundness**  Any defect or injury that interferes with the usefulness of an animal.

**urinary calculi**  Disease that causes mineral deposits to crystallize in the urinary tract. Also known as “water belly”.

**USDA**  See U.S. Department of Agriculture.

**U.S. Department of Agriculture (USDA)**  An executive department of the U.S. government that helps farmers supply farm products for U.S. consumers and overseas markets.

**U.S. Meat Export Federation (USMEF)**  Organization that works to increase consumer demand for red meats and by-products in overseas markets. Members include NCA, state cattle associations, beef councils, farm and commodity groups, packers, agribusiness companies. Funds come from its members and the USDA.

**uterus**  That portion of the female reproductive tract where the young develop during pregnancy.

**vaccination**  The act of administering a vaccine or antigens.

**vaccine**  Suspension of attenuated or killed microbes or toxins administered to induce active immunity.

**vagina**  Copulatory portion of the female’s reproductive tract. The vestibule portion of the vagina also serves for passage of urine during urination. The vagina also serves as a canal through which young pass when born.

**value-based marketing**  Marketing system based on paying for individual animal differences rather than using average prices.

**variable costs**  Costs that change with the amount produced. If the manager decides to cease production, these costs are avoidable.

**variance**  Variance is a statistic that describes the variation seen in a trait.

**variety meats**  Edible organ co-products (e.g., liver, heart, tongue, tripe).

**vas deferens**  Ducts that carry sperm from the epididymis to the urethra.

**veal**  Meat from very young cattle (under 3 months of age). Veal typically comes from dairy bull calves.

**video image analysis (VIA)**  A video image is analyzed via sophisticated computer techniques to estimate factors associated with carcass value.

**virus**  Ultra-microscopic bundle of genetic material capable of multiplying only in living cells. Viruses can cause a wide range of diseases in plants, animals, and humans, such as rabies and measles.

**viscera**  Internal organs and glands contained in the thoracic and abdominal cavities.

**vitamin**  Organic catalyst, or component thereof, that facilitates specific and necessary functions.

**volatile fatty acids (VFA)**  Group of fatty acids produced from microbial action in the rumen; examples are acetic, propionic, and butyric acids.

**vulva**  External genitalia of a female mammal.

**wasty**  Excessive accumulation of fat.

**wattle**  Method of cattle identification in which 3-6-inch strips of skin are cut on the nose, jaw, throat, or brisket.

**weaner**  Calf that has been weaned or is near weaning age.
weaning or wean  Separating young animals from their dams so that the offspring can no longer suckle.

weaning weight  Weight of the calf at approximately 5-10 months of age when the calf is removed from the cow.

weaning weight EPD  Estimate of the weaning weight (lb) potential of a sire’s progeny. Positive numbers indicate above-average performance while negative values indicate below-average weights when compared to other bulls in the same sire summary. This estimate is for direct growth, as maternal effects are removed in the calculations. See also expected progeny difference (EPD).

weaning weight ratio  The weaning weight of a calf divided by the herd average. Usually done within gender.

weight per day of age (WDA)  Weight of an individual animal divided by days of age.

white meat  Meat from poultry. See also red meat.

white muscle disease  Muscular disease caused by a deficiency of selenium or vitamin E.

wholesalers  Beef operations that buy and sell beef to other firms; considered the middlemen between the packer and consumer segments.

window of acceptability  Identifies the acceptable minimum and maximum amounts of fat in meat on the basis of meat palatability and human health.

with calf  Heifer or cow is pregnant.

withdrawal time  Amount of time before slaughter during which a drug cannot be given to an animal.

woody  Opposite of “bloom” - the animal’s hair coat appears dull, not shiny. Associated with unthrifty calves. See also bloom.

World Trade Organization (WTO)  Established on January 1, 1995 as a result of the Uruguay Round, the WTO replaces GATT as the legal and institutional foundation of the multilateral trading system of member countries.

yardage  Per-head daily fee charged by the feedyard to the customer owning the cattle. This fee is usually in addition to the cost of medicine and the feed markup.

yearling  Animals that are approximately 1 year old (usually 12-24 months of age).

yearling weight  Weight when approximately 365 days old.

yearling weight EPD  Estimate of the yearling weight (lb) potential of a bull’s progeny compared to progeny from other bulls in the same sire summary. Positive numbers indicate above-average performance while negative values indicate below-average performance. See also expected progeny difference.

yearling weight ratio  Yearling weight of a calf divided by the herd average. Usually calculated within sex.

yield  See dressing percentage.

yield grades  USDA grades identifying differences in cutability—the boneless, fat trimmed retail cuts from the round, loin, rib, and chuck.
### Acronym/Abbreviation Appendix

<table>
<thead>
<tr>
<th>Acronym/Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMP</td>
<td>Best Management Practice</td>
</tr>
<tr>
<td>AABP</td>
<td>American Association of Bovine Practitioners</td>
</tr>
<tr>
<td>AC</td>
<td>Alternating Current</td>
</tr>
<tr>
<td>AMDUCA</td>
<td>Animal Medicinal Drug Use Clarification Act</td>
</tr>
<tr>
<td>APHIS</td>
<td>Animal and Plant Health Inspection Service</td>
</tr>
<tr>
<td>A-RITS</td>
<td>Assessment, Resistance, Isolation, Traffic Control, Sanitation</td>
</tr>
<tr>
<td>AVC</td>
<td>Academy of Veterinary Consultants</td>
</tr>
<tr>
<td>AVMA</td>
<td>American Veterinary Medical Association</td>
</tr>
<tr>
<td>BCP</td>
<td>Biological, Chemical, or Physical (Hazard)</td>
</tr>
<tr>
<td>BCS</td>
<td>Body Condition Score</td>
</tr>
<tr>
<td>BH</td>
<td>Biological Hazard</td>
</tr>
<tr>
<td>BMPs</td>
<td>Best Management Practices</td>
</tr>
<tr>
<td>BQA</td>
<td>Beef Quality Assurance</td>
</tr>
<tr>
<td>BRSV</td>
<td>Bovine Respiratory Syncytial Virus</td>
</tr>
<tr>
<td>BSE</td>
<td>Bovine Spongiform Encephalopathy</td>
</tr>
<tr>
<td>BVD-PI</td>
<td>Bovine Viral Diarrhea - Persistently Infected</td>
</tr>
<tr>
<td>BVD</td>
<td>Bovine Viral Diarrhea</td>
</tr>
<tr>
<td>CA</td>
<td>Corrective Action</td>
</tr>
<tr>
<td>CA</td>
<td>Chemically-Altered</td>
</tr>
<tr>
<td>cc</td>
<td>Cubic Centimeter</td>
</tr>
<tr>
<td>CCP</td>
<td>Critical Control Point</td>
</tr>
<tr>
<td>cGMP</td>
<td>current Good Manufacturing Practice</td>
</tr>
<tr>
<td>CH</td>
<td>Chemical Hazard</td>
</tr>
<tr>
<td>CHC</td>
<td>Chlorinated Hydrocarbon</td>
</tr>
<tr>
<td>CL</td>
<td>Critical Limit</td>
</tr>
<tr>
<td>CTC</td>
<td>Chlorotetracycline</td>
</tr>
<tr>
<td>CVM</td>
<td>Center for Veterinary Medicine</td>
</tr>
<tr>
<td>CWT</td>
<td>Hundredweight</td>
</tr>
<tr>
<td>ELDU</td>
<td>Extra-Label Drug Use</td>
</tr>
<tr>
<td>ELISA</td>
<td>Enzyme-Linked ImunoSorbent Assay</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
</tr>
<tr>
<td>FARAD</td>
<td>Food Animal Residue Avoidance Databank</td>
</tr>
<tr>
<td>FASS</td>
<td>Federation of Animal Science Societies</td>
</tr>
<tr>
<td>FDA</td>
<td>Food and Drug Administration</td>
</tr>
<tr>
<td>FDA-CVM</td>
<td>Food and Drug Administration - Center for Veterinary Medicine</td>
</tr>
<tr>
<td>FMD</td>
<td>Foot and Mouth Disease</td>
</tr>
<tr>
<td>FSIS</td>
<td>Food Safety and Inspection Service</td>
</tr>
<tr>
<td>g</td>
<td>gram</td>
</tr>
<tr>
<td>HACCP</td>
<td>Hazard Analysis Critical Control Point</td>
</tr>
<tr>
<td>hd</td>
<td>Head</td>
</tr>
<tr>
<td>IBR</td>
<td>Infectious Bovine Rhinotracheitis</td>
</tr>
<tr>
<td>ID</td>
<td>Identification</td>
</tr>
<tr>
<td>IM</td>
<td>Intramuscular</td>
</tr>
<tr>
<td>IN</td>
<td>Intranasal</td>
</tr>
<tr>
<td>IPM</td>
<td>Integrated Pest Management</td>
</tr>
<tr>
<td>IPV</td>
<td>Infectious Pustular Vulvovaginitis</td>
</tr>
<tr>
<td>IV</td>
<td>Intravenous</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>K</td>
<td>Killed</td>
</tr>
<tr>
<td>LAST</td>
<td>Live Animal Swab Test</td>
</tr>
<tr>
<td>lb</td>
<td>pound</td>
</tr>
<tr>
<td>MFA</td>
<td>Medicated Feed Application</td>
</tr>
<tr>
<td>mg</td>
<td>milligram</td>
</tr>
<tr>
<td>MLV</td>
<td>Modified Live Virus</td>
</tr>
<tr>
<td>MRL</td>
<td>Maximum Residue Level</td>
</tr>
<tr>
<td>MSDS</td>
<td>Material Safety Data Sheet</td>
</tr>
<tr>
<td>MWPS</td>
<td>Midwest Plan Services</td>
</tr>
<tr>
<td>NADA</td>
<td>New Animal Drug Application</td>
</tr>
<tr>
<td>NASA</td>
<td>National Aeronautic and Space Administration</td>
</tr>
<tr>
<td>NBPQA</td>
<td>National Beef Quality Audit</td>
</tr>
<tr>
<td>NIAA</td>
<td>National Institute for Animal Agriculture</td>
</tr>
<tr>
<td>NRC</td>
<td>National Research Council</td>
</tr>
<tr>
<td>NRP</td>
<td>National Residue Program</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>OTC</td>
<td>Over-the-Counter</td>
</tr>
<tr>
<td>PI3</td>
<td>Parainfluenza-3</td>
</tr>
<tr>
<td>PCB</td>
<td>Polychlorinated Biphenyl</td>
</tr>
<tr>
<td>PCPs</td>
<td>Pentachlorophenols/Pentachlorophenates</td>
</tr>
<tr>
<td>PH</td>
<td>Physical Hazard</td>
</tr>
<tr>
<td>PHAST</td>
<td>Pre-Harvest Antibiotic Screening Test</td>
</tr>
<tr>
<td>PI</td>
<td>Persistently Infected</td>
</tr>
<tr>
<td>PRCE</td>
<td>Prevent, Reduce, Control or Eliminate</td>
</tr>
<tr>
<td>QC</td>
<td>Quality Control</td>
</tr>
<tr>
<td>RITS</td>
<td>Resistance, Isolation, Traffic Control, Sanitation</td>
</tr>
<tr>
<td>RNA</td>
<td>Ribonucleic Acid</td>
</tr>
<tr>
<td>RUP</td>
<td>Restricted Use Pesticide</td>
</tr>
<tr>
<td>Rx</td>
<td>Prescription</td>
</tr>
<tr>
<td>SOP</td>
<td>Standard Operating Procedure</td>
</tr>
<tr>
<td>SQ</td>
<td>Subcutaneous</td>
</tr>
<tr>
<td>SSOPs</td>
<td>Sanitation Standard Operating Procedures</td>
</tr>
<tr>
<td>T</td>
<td>Topical</td>
</tr>
<tr>
<td>TDS</td>
<td>Total Dissolved Solids</td>
</tr>
<tr>
<td>THI</td>
<td>Temperature Humidity Index</td>
</tr>
<tr>
<td>TQA</td>
<td>Total Quality Management</td>
</tr>
<tr>
<td>USDA</td>
<td>United States Department of Agriculture</td>
</tr>
<tr>
<td>USDA-APHIS</td>
<td>United States Department of Agriculture - Animal and Plant Health Inspection Service</td>
</tr>
<tr>
<td>USDA-FSIS</td>
<td>United States Department of Agriculture - Food Safety and Inspection Service</td>
</tr>
<tr>
<td>UV</td>
<td>Ultraviolet</td>
</tr>
<tr>
<td>VCPR</td>
<td>Veterinarian/Client/Patient Relationship</td>
</tr>
<tr>
<td>VDA</td>
<td>Veterinary Drug Authorization</td>
</tr>
<tr>
<td>VDO</td>
<td>Veterinary Drug Order</td>
</tr>
<tr>
<td>VFD</td>
<td>Veterinary Feed Directive</td>
</tr>
<tr>
<td>WPS</td>
<td>Worker Protection Standard</td>
</tr>
</tbody>
</table>
BQA Training Program Checklist and Personal Contract.

Please answer the following questions YES or NO as they relate to the BQA program.

1. (YES or NO) A quality feed control program will be maintained for all incoming ingredients. This program will analyze any suspect contamination and eliminate any contaminated products as a result of molds, mycotoxins, or chemicals.

2. (YES or NO) Only FDA approved medicated feed additives will be used in rations and they will be used in accordance with the FDA label, including administration procedure, dosage, and withdrawal time. Extra label drug use of feed additives will not be used at any time or for any reason.

3. (YES or NO) Records will be maintained for at least two years and will contain the batches of feed produced which contain the additive, date run, ration number or name, and amount produced.

4. (YES or NO) All individual treatments will be given in the neck region regardless of being administered subcutaneously or intramuscularly.

5. (YES or NO) All individual treatments will strictly follow only FDA/USDA/EPA guidelines and products which cause tissue damage will be avoided.

6. (YES or NO) Products will be administered at the lowest dosage recommended and will be administered in such a manner where there will not be more than 10 cc per IM site administered.

7. (YES or NO) Treatment procedures will comply with either label directions or as prescribed by a veterinarian with a Veterinarian/Client/Patient relationship.

8. (YES or NO) All treatments administered extra label will be kept to a minimum and when given extra label treatments are given they will comply with the prescribed extended withdrawal time.

9. (YES or NO) Treatments will either be recorded on a group/pen basis if given to a pen or if given to animals pre-weaning and on an individual basis if given to an animal post-weaning. Records will consist of date, pen/individual identification, product used, amount given, route and location given, and withdrawal time.

10. (YES or NO) All cattle shipped will be checked to verify withdrawal times have been met and a release slip will be signed, dated, and sent with those cattle verifying this information.

11. (YES or NO) Should there be any question about withdrawal periods being met, veterinarians will evaluate the treatment history against information provided by the Food Animal Residue Avoidance Databank and the animal will be subject to pass a residue screening test.

12. (YES or NO) All records will be kept for two years and transferred with the cattle as they move from one operation to another and will also be available for inspection by BQA program staff or other named individuals in order to determine compliance.

13. (YES or NO) The operation will strive to prevent bruising during animal handling.

14. (YES or NO) Should a previous owner request performance information of cattle, all information available will be relayed back to them.

I understand the importance of the above items in the National Beef Quality Assurance Program and agree to follow the recommended production practices.

Print Name ___________________________________________  Date ____________________________
Signature ____________________________________________  Operation _______________________
BQA Trainer ___________________________________________