

Animal Science (2024)

PROFESSIONAL ORGANIZATIONS AND LEADERSHIP 1.0

1 Student Leadership in Career Technical Student Organizations (CTSO) and Professional Associations 1.1

- 1 Explore the role of professional organizations and/or associations in the animal science industry. 1.1.1
- 2 Define the value, role, and opportunities provided through career technical student organizations. 1.1.2
- 3 Engage in career exploration and leadership development. 1.1.3

IDAHO ANIMAL AGRICULTURE INDUSTRY 2.0

1 Animal Agriculture Industries and Careers 2.1

- 1 Rank the importance of the animal production industries in Idaho. 2.1.1
- 2 Compare the economic importance of animal production nationally and internationally. 2.1.2
- 3 Identify career pathways within the animal science industry. 2.1.3
- 4 Describe the educational requirements for a career pathway within the animal science industry. 2.1.4
- 5 Describe working conditions for job titles within the animal science industry. 2.1.5
- 6 Describe the value of certifications in the animal agriculture industry. 2.1.6
- 7 Describe the purpose of maintaining supervised agriculture experience (SAE) record books. 2.1.7
- 8 Identify proficiency award areas related to an SAE program area. 2.1.8

2 Agricultural Business, Marketing, Finance, and Risk Management 2.2

- 1 Describe value-added concepts of marketing. 2.2.1
- 2 Describe current industry needs and goals for agriculture marketing. 2.2.2
- 3 Define risk management in livestock enterprises. 2.2.3

3 Beef Industry 2.3

- 1 Determine the facility and equipment needs for beef production. 2.3.1
- 2 Compare types of beef production systems. 2.3.2
- 3 Compare grazing systems. 2.3.3
- 4 Describe land management practices and the importance of working relationships with land management agencies (e.g., Forest Service, Bureau of Land Management [BLM], private landowners). 2.3.4

4 Dairy Industry 2.4

- 1 Describe elements of dairy production. 2.4.1
- 2 Determine the facility and equipment needs for dairy production. 2.4.2
- 3 Compare types of dairy production systems. 2.4.3
- 4 Compare milking systems. 2.4.4
- 5 Describe economically important dairy products. 2.4.5

5 Other Food Animal Systems 2.5

- 1 Describe the elements of sheep and goat production. 2.5.1
- 2 Describe the elements of swine production. 2.5.2
- 3 Describe the elements of poultry production. 2.5.3
- 4 Describe the elements of aquaculture production. 2.5.4

6 Equine Industry 2.6

- 1 Describe the elements of the equine industry. 2.6.1
- 2 Describe basic equine anatomy, including the characteristics and function of the cecum. 2.6.2

NUTRITIONAL REQUIREMENTS FOR LIVESTOCK 3.0

1 Digestive Systems of Domestic Animals 3.1

- 1 Compare the ruminant (e.g., cattle, sheep) and monogastric (e.g., swine, avian) digestive systems. 3.1.1
- 2 Describe the characteristics and function of a ruminant system. 3.1.2
- 3 Describe the functions of the small and large intestines. 3.1.3

2 Livestock Feedstuffs 3.2

- 1 Identify feedstuffs by the nutrients they provide. 3.2.1
- 2 Identify the benefits of roughages, concentrates, supplements, and additives. 3.2.2
- 3 Evaluate the differences between good-quality feedstuffs and poor-quality feedstuffs. 3.2.3
- 4 Describe how processing, storage, and feeding methods affect the quality of feedstuffs. 3.2.4

3 Balanced Livestock Feed Rations 3.3

- 1 Identify methods of feed analysis (e.g., wet chemistry, near-infrared [NIR] spectroscopy). 3.3.1
 - 2 Conduct a feed analysis. 3.3.2
 - 3 Identify the steps in balancing rations. 3.3.3
 - 4 Describe how nutritional information is used to develop animal rations at various physiological stages. 3.3.4
 - 5 Develop balanced rations using the Pearson square ration formulation procedure. 3.3.5
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LIVESTOCK REPRODUCTIVE SYSTEMS 4.0

1 Reproductive Management of Domestic Animals 4.1

- 1 Identify the components and functions of the male and female reproductive structures. 4.1.1
 - 2 Develop a breeding program (i.e., breeding plan) for livestock production. 4.1.2
 - 3 Identify and interpret the signs of estrus in relation to the reproductive cycle. 4.1.3
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2 Natural and Artificial Animal Reproduction 4.2

- 1 Describe the effects of hormones on the reproduction cycle. 4.2.1
 - 2 Describe the stages of gestation leading to parturition. 4.2.2
 - 3 Describe common issues that could occur during the stages of gestation through parturition. 4.2.3
 - 4 Describe the process of artificial insemination in domestic livestock. 4.2.4
 - 5 Describe procedures for the collection, evaluation, and handling of semen. 4.2.5
 - 6 Describe the advantages and disadvantages of artificial insemination and natural breeding. 4.2.6
 - 7 Describe the processes of estrous synchronization, semen sexing, embryo transfer, cloning, and genetic engineering. 4.2.7
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3 Lactation 4.3

- 1 Describe the lactation cycle and factors that affect milk production (e.g., genetics, disease, feed, environment, body condition, age, stress). 4.3.1
 - 2 Describe the components of milk and colostrum and their roles in nourishing newborn livestock. 4.3.2
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PRINCIPLES OF EVALUATION FOR ANIMAL SELECTION 5.0

1 Genetics 5.1

- 1 Describe Mendel's basic principles of heredity. 5.1.1
- 2 Describe heritable traits and their effects on breeding. 5.1.2
- 3 Describe the principles of dominance and incomplete dominance. 5.1.3
- 4 Analyze heritability estimates as a selection factor in breeding programs. 5.1.4

- 5 Describe the relationship between genotype, environment, and phenotype. 5.1.5
 - 6 Describe the advantages of crossbreeding and hybrid vigor in livestock production. 5.1.6
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2 Types and Conformation of Production Livestock 5.2

- 1 Describe the body condition scoring system among the different species. 5.2.1
 - 2 Analyze performance data and expected progeny differences (EPD) when evaluating livestock. 5.2.2
 - 3 Evaluate animal phenotypes (e.g., muscle mass, maternal traits, and frame size) according to current industry standards. 5.2.3
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PRODUCTION LIVESTOCK QUALITY ASSURANCE 6.0

1 Animal Behavior 6.1

- 1 Compare patterns of animal behavior. 6.1.1
 - 2 Describe methods and benefits of animal behavior modification. 6.1.2
 - 3 Describe the relationship between facilities and livestock behaviors. 6.1.3
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2 Animal Welfare Issues 6.2

- 1 Compare animal welfare and the concept of animal rights. 6.2.1
 - 2 Identify controversial issues in animal usage (e.g., rodeo, circus). 6.2.2
 - 3 Describe the effects of mass media on the public perception of livestock production. 6.2.3
 - 4 Compare cultural differences and their impacts on animal usage (e.g., Halal, Kosher). 6.2.4
 - 5 Describe legislation regarding animal usage and welfare (e.g., confinement, antibiotics, hormones). 6.2.5
 - 6 Describe emerging trends in livestock production welfare. 6.2.6
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3 Quality Assurance Standards 6.3

- 1 Describe the importance of quality assurance standards for Idaho's livestock industry. 6.3.1
 - 2 Describe how quality assurance standards are administered. 6.3.2
 - 3 Describe agencies and regulations that govern livestock production. 6.3.3
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ANIMAL HEALTH AND CARE 7.0

1 Animal Health 7.1

- 1 Interpret the behavioral signs of healthy and unhealthy animals. 7.1.1
- 2 Describe the importance of controlling diseases and parasites in production livestock. 7.1.2
- 3 Identify how passive and active immunity can be enhanced by management. 7.1.3
- 4 Develop an animal health plan. 7.1.4

- 5 Describe the importance of maintaining accurate health records for production livestock. 7.1.5
 - 6 Describe ways of identifying and tracking individual animals. 7.1.6
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2 Animal Diseases and Parasites 7.2

- 1 Compare viral, bacterial, fungal, and parasitic diseases. 7.2.1
 - 2 Determine prevention and treatment methods for common reproductive diseases. 7.2.2
 - 3 Describe the modes of transmission of infectious diseases. 7.2.3
 - 4 Identify common internal and external parasites that affect production livestock. 7.2.4
 - 5 Identify common reproductive diseases that affect production livestock. 7.2.5
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3 Disease Control and Management 7.3

- 1 Describe the use of vaccines in disease control. 7.3.1
 - 2 Compare appropriate storage methods for medications. 7.3.2
 - 3 Describe methods to administer vaccines and pharmaceuticals. 7.3.3
 - 4 Identify methods to administer vaccines and pharmaceuticals. 7.3.4
 - 5 Describe the types of injections (e.g., subcutaneous, intramuscular, intravenous). 7.3.5
 - 6 Determine the appropriate injection sites to administer vaccines and pharmaceuticals. 7.3.6
 - 7 Interpret labels and dosages found on animal medications. 7.3.7
 - 8 Describe how cleanliness affects disease control. 7.3.8
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ANIMAL PRODUCTS AND PROCESSING 8.0

1 Meat Animal Harvesting and Processing 8.1

- 1 Outline the major steps involved in the harvesting and processing of meat animals. 8.1.1
 - 2 Identify the wholesale and retail cuts and by-products of meat animals. 8.1.2
 - 3 Calculate dressing percentages. 8.1.3
 - 4 Describe how yield grade and quality grade affect the value of the carcass. 8.1.4
 - 5 Identify other animal product and processing industry segments in Idaho. 8.1.5
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2 Dairy Product Processing 8.2

- 1 Identify dairy quality control standards and requirements. 8.2.1
- 2 Identify dairy processing methods. 8.2.2