Idaho CTE

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 agricultural 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

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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

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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

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

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

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

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

Describe the principles of dominance and incomplete dominance. 5.1.3

Analyze heritability estimates as a selection factor in breeding programs. 5.1.4

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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

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

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

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

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

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

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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

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

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

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

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