CERTIPORT
A PEARSON VUE BUSINESS

Agriscience Foundations
Objective Domains

This exam certifies that a candidate has the essential knowledge and skills necessary to work professionally in an entry level position in the agriculture industry. A successful candidate can demonstrate essential skills and knowledge in the application of basic plant, animal, and soil science; food safety; agricultural safety and regulatory practices; record keeping/documentation; and an efficient and effective use of resources. **150 hours or more of instruction and/or hands-on experience should be completed prior to taking this exam.**

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1. Health of Agricultural Systems

1.1. Differentiate between healthy and unhealthy agricultural systems and habitats.

- Plants
- Domestic and wild animals
- Environment
  - i. Contamination (not including identification of a specific contaminate), erosion, point and non-point pollution.
- Explain the impacts of conservation practices on soil and water resources.

1.2. Summarize basic Integrated Pest Management (IPM) practices.

- Differentiate between biological, mechanical, cultural, and chemical controls.
- Understand that there may be multiple factors contributing to problems.
- Understand the importance of maintaining beneficial insects.

1.3 Describe properties of healthy soil.

- Identify macronutrients.
- Understand major soil structure and texture types.
- pH
- Organic matter

1.4. Explain how water moves between the land, ocean, and atmosphere (e.g. the water cycle).

2. Using and Maintaining Industry Documents

2.1. Maintain complete and accurate records.

- Livestock and crop production records
- Chemical application records
- Animal medication records
- Food processing records
- Time and Temperature logs
- Financial reports

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2.2 Interpret information on labels.

- Pesticides
  - i. Chemical name, active ingredient, signal word, type of pesticide, organic/conventional classification
- Feed
  - i. Guaranteed Analysis, intended purpose, ingredient statement, feeding instructions.
- Medicine
  - i. Medication, dose, administration, withdrawal, intended animal, warnings, side effects.
- Nutrition Fact Panel
  - i. Serving size, servings per container, nutrient values
- Seed Tag
  - i. Variety, in-row spacing, row spacing, days to maturity, seed treatment, production date, germination rate, Genetically Modified (GM) classification.
- Fertilizer
  - i. Grade Statement and Guaranteed Analysis, Nutrient Source, organic/conventional classification.
- Principal Display Panel
  - i. Brand name, common name, net weight, label claims (e.g., Organic, low-fat, good source of calcium)

2.3 Use weights and measures to complete simple calculations using information on labels and tags.

- Imperial and metric
- Conversions, dose calculations, pesticide rate of application, mixing solutions, land area, etc.

2.4 Interpret information on Safety Data Sheets (SDS).

- Section 1: Identification
- Section 2: Hazard(s) Identification
- Section 4: First-Aid Measures
- Section 5: Fire-Fighting Measures
- Section 7: Handling and Storage
- Section 8: Exposure Controls/Personal Protection

3. Workplace Safety and Procedures

3.1 Given a Standard Operating Procedure (SOP), select and use appropriate tools and equipment for job-related tasks.

- Select and use appropriate tools for different tasks (e.g., hand tools, power equipment, machinery, lab equipment)
- Proper cleaning and storage of tools (e.g. Need to clean tools when transitioning between systems).
- Reference and locate basic information in equipment Original Equipment Manufacturer (OEM) manuals for proper use, maintenance, and simple repair.

3.2 Implement sanitation and cleanliness to adhere to biosecurity standards.

- Identification/use of PPE

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- Prevent contamination.
  - i. Personal hygiene
- Control pathogens and vectors.
- Lab safety practices (e.g., hair tied back, gloves, closed-toe shoes, jewelry, etc.)
- Distinguish between safe and unsafe environmental conditions (e.g., air quality, work environment, etc.).

3.3 Summarize the contents of the Worker Protection Standard (WPS) and how it applies to the agricultural employee.

4. Animal Science

4.1 Identify different uses of animals.

- Animal protein production
- Companionship
- Labor
- Specialty livestock (e.g., bees, aquaculture, etc.)

4.2 Identify species-specific terminology based on gender and age.

4.3 Given a scenario, explain the role of flight zones in the safe handling of animals.

4.4 Identify principles of quality care in animal agriculture.

- Food
- Water
- Shelter
- Health Care

5. Plant Science

5.1 Explain principles of plant biology.

- Explain the requirements necessary for photosynthesis to occur and identify the products and byproducts of photosynthesis.
- Explain the role of each part of a plant (e.g., root, stem, leaves, flower, fruit, seed).
- Differentiate between monocotyledon and dicotyledon plants.

5.2 Summarize plant nutrients and their delivery.

- Understand the roles of macronutrients in plant growth.
- Know different application methods of fertilizers.

5.3 Explain what seeds need to germinate and grow.

- Light
- Moisture
- Temperature
- Oxygen
- Humidity

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6. Food Safety

6.1 Describe how temperature affects microbial growth.

- USDA danger zone where pathogens grow: 40F to 140F.
- Refrigerator, freezer, room temperature, warm

6.2 Determine which allergens are present in a food product.

- Understand that there are specific lists of food allergens.
- Tree nuts, peanuts, fish, crustacean shellfish, wheat, soy, milk, eggs, sesame

6.3 Distinguish between sources of food contamination.

- Biological
- Chemical
- Physical

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