Group 13: Noverah Adeen, Elizabeth Burns, Brielle Damiani

CSC-315

2/14/2024

Phase IIb: Project Proposal and Specifications

Progeny Report by Dam & Optimal Date of Birth

Introduction:

Silvies Valley Ranch is dedicated to the widespread of American Range Goats across farms, recognizing their superior sustainability as food sources compared to cows, which contribute to environmental degradation. As pioneers in American Range Goat development, Silvies Valley Ranch has partnered with Professor John Degood's Databases class to create a comprehensive database facilitating the discovery of optimal goat breeding practices. This collaborative effort addresses two research objectives: the creation of a progeny report, as requested by Silvies Valley Ranch, and the investigation of the ideal birth date for goats. Both endeavors are aimed at empowering Silvies Valley Ranch to more effectively discern optimal breeding techniques for their American Range Goats initiative.

Research Questions:

Questions being addressed by our Progeny Report research

- RQ1: How is the weight of the goat correlated to its bloodline?
- RQ2: Is there a pattern in birth, sale, winter and weaning weight throughout each bloodline of goat? (Want to be able to easily view all information about a goat and its sire, dam, and as many ancestors' weight data.)

Questions Being Answered by our Optimal Date of Birth research

- RQ3: What is the best month/week for a goat to be born?
- RQ4: Is there a difference in individual birth weight at different times of the year?
- RQ5: Are there more multiple births in specific months/days?
- RQ6: Are there more stillbirths in specific months/days?

Relevant Data:

For Topic 1: Progeny Report

- EID Tag #
- Visual Tag #
- Date of Birth
- Dam
- Sire
- How Many Kids Did Each Female Have
- Birth Weight
- Weaning Weight
- Winter Weight
- Sale Weight

Our Research Topic: Optimal Date of Birth

- Birth weight, (average litter weight)
- Date of birth
- Number of stillborns (DWOT, DOA)
- Any data on multiple births (twins, triplets, etc)

Real-World Application

- The progeny report by dam, without having to look up one goat at a time, would allow for easier lineage tracking and organization. This would be important to optimize data searches and allow stakeholders to keep track of any ancestrally inherited traits or defects that may occur. Since the health, wellbeing, and development of the goats are key factors in the success of the goats, an ancestral perspective provides information and insight on improving and maintaining the quality of the farm goats. Thus many questions can be investigated and answered. For example, finding the optimal time for kids to be born will help breeders know the best time to breed their goats for the healthiest kids, and finding out the optimal bloodline of goat will allow the breeders to more easily breed the optimal goat that will perform most successfully, quantified by the weight at different milestones of the goats life.

Impacts on Sustainability:

- Implementation of the above would increase the efficiency of goat-related resource management. Identification of the most ideal birth data would aid in breeding goats that are healthy and undergo consistent and exceptional development. This would not only decrease the need for resources and health accommodations for weaker goats, but increase the sale number of goats. Over all, a greater sale-standard population will popularize the American Range Goat and increase the scale of business and customer scope.

Methodology:

<u>Use Case: Filter by Date of Birth</u>

1. User selects Filter by DOB.

2. System prompts the user for a date.
3. User inputs a valid date.
4. System displays all entities with a DOB matching the user input in step 3.

3.a. The date is invalid.

1. System tells the user the date is invalid.
2. The use case continues at step 2.

4.a. There are no entities with a DOB matching the user input in step 3.

1. The system tells the user there are no entities with the input DOB.
2. The use case continues at step 2.

Use Case: Filter How Many Generations Are Visible

1. User selects an entity.
2. System displays the progeny report of that entity.
3. User selects Filter Number of Generations.
4. System prompts the user for a number of generations.
5. User inputs a valid number of generations.
6. System displays the number of generations matching the amount of the input in step 5.

3.a. The number of generations is invalid.

1. System tells the user the number of generations is invalid.
2. The use case continues at step 4.

4.a. The selected entity's maximum number of generations is less than the user input in step 5.

1. System displays the number of generations matching the amount of the entity's maximum number of generations.

2. System tells the user the current entity only has its maximum number of generations in the database.

Formulas and Rules

Valid Date: A date is valid if the month input is an integer between 1 and 12, the day is an integer between 1 and 31, and the year is a 4 digit whole number.

Valid Number of Generations: A number of generations is valid if it is a whole number.

Maximum Number of Generations: The number of ancestral generations for an entity that can be traced through the recorded information in the database.