

Sheep Selection Program –Lambing Data

by – Peggy Welch

Activity overview

Primary emphasis in a sheep selection program should be based on the number of lambs born and weaned per ewe exposed (permitted to mate with a ram during a specific time frame determined by the shepherd, usually a 50 to 60 day period). Lambing records can provide several characteristics of the flock including: lambing rate, lambing percentage, average age of ewes lambing, average birth date, average birth weights, percent male vs. female lambs, birth weights of male vs. female lambs and birth weights of single vs. twin lambs.

Concepts

Students will investigate the use of lambing records in a sheep selection program and statistically analyze the birth weights of a flock of sheep.

Teacher preparation

Make copies of the activity.

Ask students if they have access to similar types of data from their farm.

TI-Nspire Applications

Students will be using Lists & Spreadsheet application on the TI-Nspire™

Step-by-step directions

1. Table 1 is a lambing record sheet for 30 Polypay lambs born to 19 of the 22 Polypay ewes exposed to a ram at the University of Kentucky Agricultural Research Farm in Versailles, Kentucky. From this table, you can see that ewes can have multiple births (twins, triplets, etc.).

Table 1. Polypay Lambing Data

Lamb	Birth weight (lbs)	Lamb sex
1	10.8	F
2	10.2	F
3	10.7	F
4	9.5	M
5	7.8	M
6	7.0	F
7	6.5	F
8	8.3	F
9	6.0	F
10	6.0	M
11	8.2	F
12	6.3	F

13	9.0	F
14	9.2	M
15	10.7	M
16	9.2	M
17	5.7	F
18	4.8	M
19	7.0	M
20	7.1	F
21	10.0	F
22	6.0	M
23	5.0	F
24	6.5	F
25	9.0	F
26	9.0	M
27	8.3	F
28	9.8	F
29	8.2	M
30	11.5	M

2. The flock's shepherd needs to know the flock lambing rate (LR), which is the number of lambs born per ewe lambing. To calculate LR from data in Table 1, use the following formula:

$$\text{LR} = \text{Number of lambs born alive} / \text{Number of ewes lambing}$$

3. Calculate the LR for this flock. Express your answer in a decimal to the nearest hundredth.

(ans. 1.58 lambs born/ewe lambing)

4. Lambing rate is based on the number of ewes lambing and gives no information about ewes that never conceived or those failing to reach the full pregnancy term of 147 days. Calculation of lambing percentage (LP) will give the answer. Lambing percentage is calculated by the following formula:

$$\text{LP} = (\text{Number of lambs born alive} / \text{Number of ewes exposed to ram}) \times 100.$$

5. Calculate the LP for the flock shown in Table 1. Express your answer in a percentage. _____

6. What does this percentage imply about the types of births that occurred?

Problem

Now let's compare birth weights of male and female lambs.

1. Open a new document and insert the *Lists & Spreadsheet* application.
2. Enter the following data in Column A (female) and Column B (male).

Females	Males
10.8	9.5
10.2	7.8
10.7	6
7	9.2
6.5	10.7
8.3	9.2

6	4.8
8.2	7
6.3	6
9	9
5.7	8.2
7.1	11.5
10	
5	
6.5	
9	
8.3	
9.8	

3. Using the NavPad, arrow up to the top of Column A and name it female. Name Column B male.
 4. Press **MENU > Statistics > Stat Calculations > One-Variable Statistics**
 5. For X list, choose Female.
 6. Direct the regression equation to fill Column C by changing b to c.
 7. Using the NavPad, arrow back to Column A.
 8. Press **MENU > Data > Quick Graph > Menu > Plot Type > Box Plot.**
 9. Using the cursor, record the statistical values from the box plot. Draw a diagram of this box plot with its statistical values.
 10. Repeat steps 4 – 9, making sure to choose Male for the X list in step 5.
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Assessment and evaluation

Complete the table.

Sex	Xmin	Q1	Median	Q3	Xmax
Male					
Female					

How do the values for the two different sexes compare?

What factors besides sex determine the birth weight of lambs?

Activity extension

Analyze data sets from other types of animals.

Research the occurrence of twinning or multiple births in other types of animals.