My Question
What is the most sustainable protein source?

Independent variable
The protein source.

Dependent variable
The sustainability of each product and amount of people who choose each product.

Controlled variables
Amounts compared in any question (set amount), units used to measure, categories/questions for each variable, questions asked in the survey, and age group for the survey.

Hypothesis
I think crickets are the most sustainable protein source overall because crickets are small and don't need as much food as cattle. They are also 60% protein and can thrive in a crowded environment. However, I think that the most sustainable protein source people are most likely to choose is eggs because they are high in protein, don't take as many resources to harvest as cattle and are very familiar to the average consumer.

Methods
Phase 1
I will research various protein sources through this project to find the most sustainable overall. To evaluate each product's sustainability, I will apply various questions to it. Those questions are:

How much must be eaten to get 50 grams of protein? (Is it worth the time, resources and effort to grow?)
How long does it take to grow or raise 50 grams of protein?
How much water does it take to grow/raise 50 grams of protein?
How long does it last? (How perishable is it?)
What is the cost?

All questions are applied to a 50-gram portion because that is the recommended daily protein intake recommended for adults (on average). Using these questions I can find out how much time, money, and energy goes into using this protein source. The types of protein will be organized into two categories animal and plant-based proteins. While this is not the main comparison it will help us understand which protein source is best within the two categories to account for dietary requirements or preferences. In the animal-based section, I will examine eggs, chicken breast, salmon, cow's milk, cheddar cheese, greek yogurt, beef, and crickets. In the plants section, I will look at lentils, soybeans, peanuts, almonds, and walnuts.

Phase 2

After collecting the results from Phase 1 I will create a survey that simulates being in a grocery store. I will gather participants from different cultural backgrounds but I would like to stay within an age group of 14 and up because this age group is more likely to be making these purchases. Participants are given the protein sources listed in Phase 1 and information on the protein content, energy and cost it takes to grow/raise, cost and its expiration date. The participants will then have to choose one of the items to purchase. The survey will then ask the reason they made this purchase. This survey will help us understand what factors the average consumer considers when purchasing an item, what is the most sustainable option that was chosen and how companies can make sustainable products more appealing. This phase will answer the final question I have: How likely are consumers to choose this source?

Background research
- My project overall concerns health and life sciences
-Health sciences are all about people and life sciences concern all living things
-These sciences specifically life sciences are such a big part of our lives it comes into play in healthcare, nutrition and even the environment

-My project deals with sustainable choices we can make when choosing food, specifically a protein source.
-Protein is made up of amino acids
-11 non-essential amino acids 9 essential
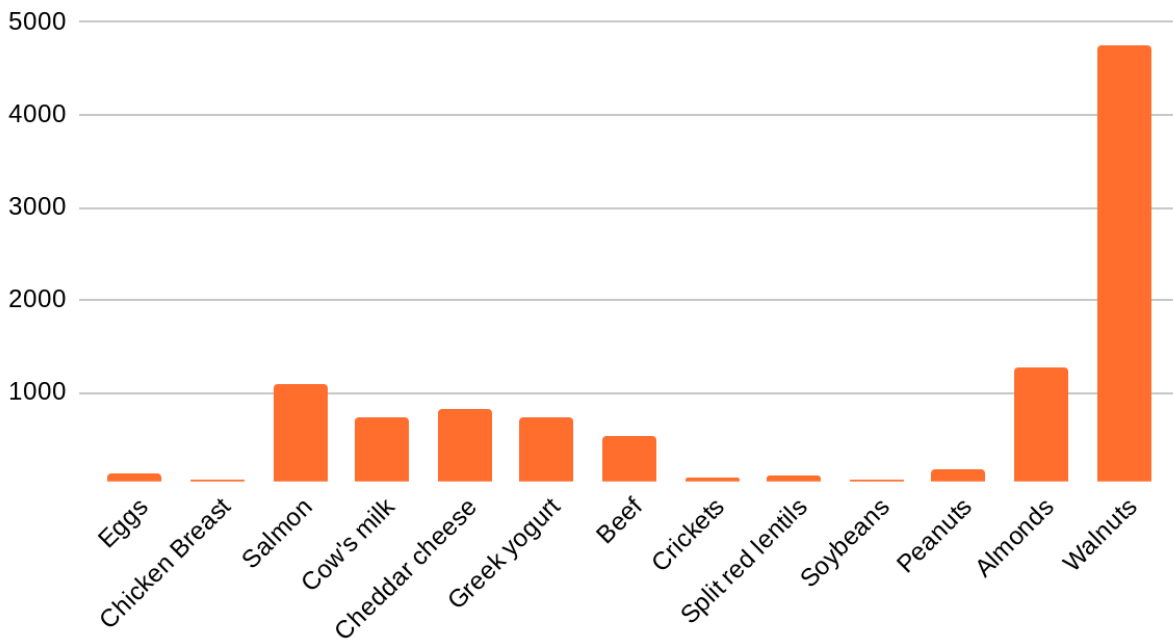-your body uses them to build up muscle, hormones, enzymes and bone
-It can also give you energy

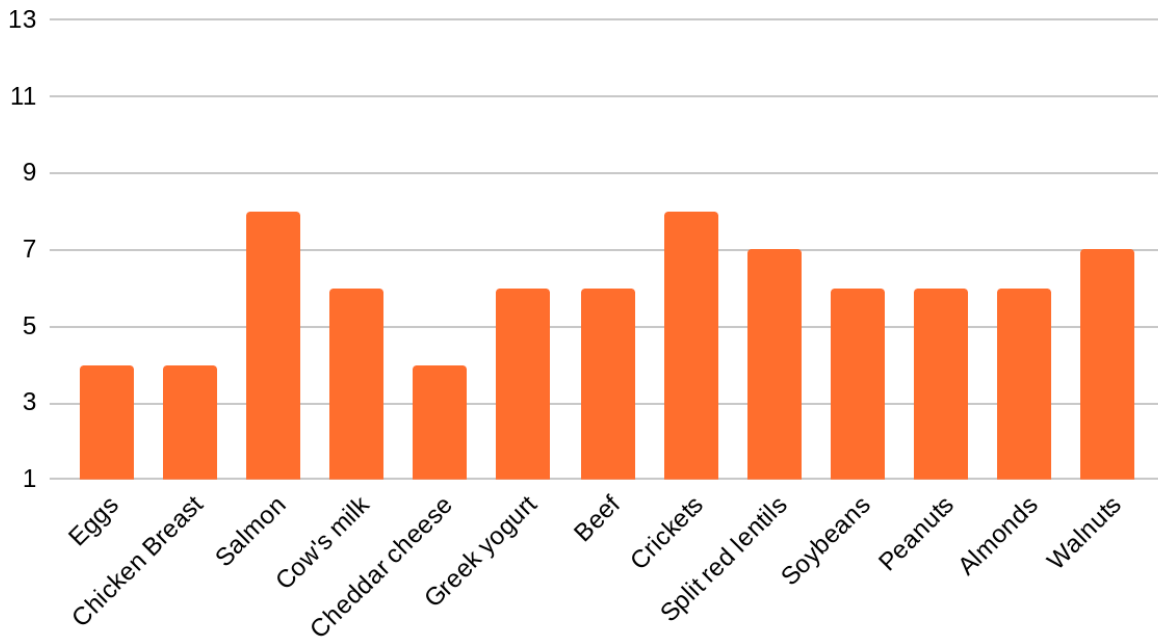-We know that the process of farming specifically animals has a huge impact on the environment
-Just one pound of beef takes 2500 gallons of water, and one pound of eggs takes 477 gallons to produce.
-Animal agriculture is responsible for 65% of nitrous oxide emissions which has a 296 times greater impact on climate change than carbon dioxide.
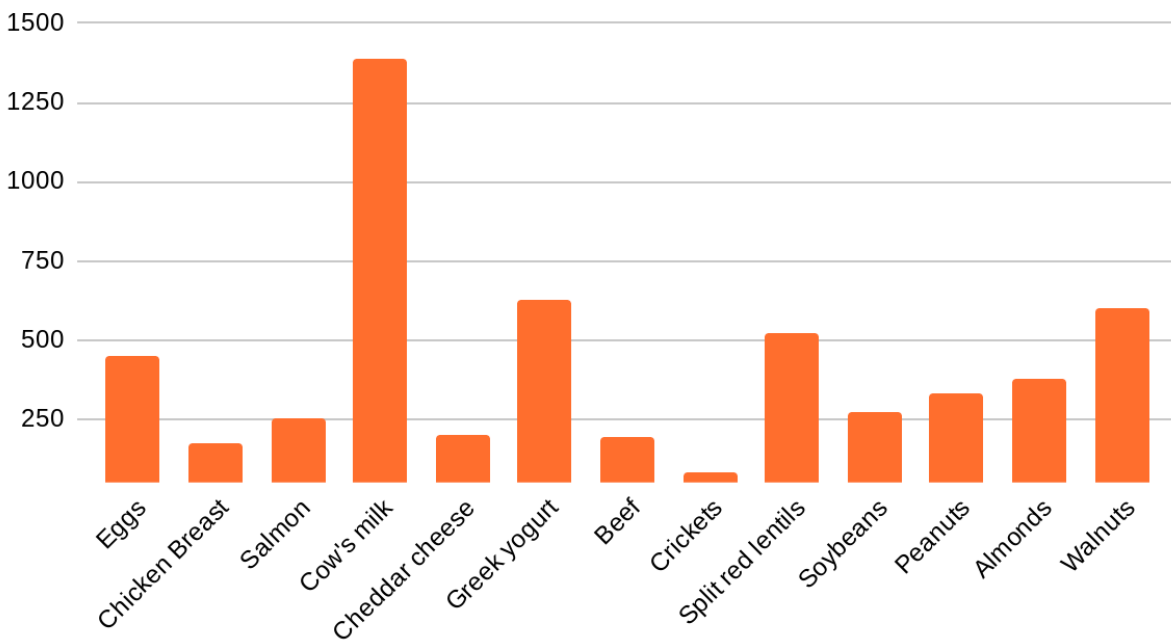
Time needed for harvest in Days

Ranked Based on Popularity (scale from 1-13)

Food	Popularity
Eggs	4
Chicken Breast	4
Salmon	8
Cow's milk	6
Cheddar cheese	4
Greek yogurt	6
Beef	6
Crickets	8
Split red lentils	7
Soybeans	6
Peanuts	6
Almonds	6
Walnuts	7

Amount Needed to Get 50 grams of Protein in grams

Food	Grams
Eggs	450
Chicken Breast	175
Salmon	250
Cow's milk	1380
Cheddar cheese	200
Greek yogurt	625
Beef	190
Crickets	80
Split red lentils	520
Soybeans	270
Peanuts	325
Almonds	375
Walnuts	600

Water Needed To Grow in Liters

Bar chart showing water needed to grow in liters for: Eggs, Chicken Breast, Salmon, Cow's milk, Cheddar cheese, Greek yogurt, Beef, Crickets, Split red lentils, Soybeans, Peanuts, Almonds, Walnuts. Y-axis ranges from 0 to 125000.