Why we need an incubator for sporulation of bacillus subtilis:

Temperature Control: Sporulating bacteria require a consistent temperature, typically in the range of 30°C to 37°C, to undergo sporulation. Without an incubator, it is hard to maintain the constant temperature needed for the bacteria to grow and form spores efficiently. Fluctuations in temperature could slow down or disrupt the sporulation process, affecting the reliability of the experiment.

Consistent Environment: Bacteria are highly sensitive to environmental changes. An incubator allows for consistent, stable conditions that promote optimal growth. This is especially important when conducting an experiment that involves precise timing—for example, ensuring that the bacteria sporulate during a specific phase of their growth cycle.

Humidity Control: Some bacteria, especially those that grow in moist environments, require a certain level of humidity to thrive. An incubator can help maintain an ideal level of moisture in the air, ensuring that the bacterial cells remain hydrated and are able to grow and sporulate properly.

Enhanced Reproducibility: Using an incubator ensures that the experimental conditions are the same each time, which is critical for reproducibility. If conditions like temperature, humidity, and air circulation are uncontrolled, results can vary significantly, making it difficult to draw meaningful conclusions.

The problem:

Incubators start at 150 dollars which is almost half of our budget. DIY incubators can be made but then you probably wouldnt we able to contol all the factors needed for sporulation. Also the most important factor for sporulation of basilicus subtilis is starvation, though temperature and humidity still can change the outcome