OCT 24, 2020

Measuring the amount of bacteria in a soil sample

Andreea S¹

¹University of Groningen

iGEM Groningen 2020

r.rajadhyaksha

OPEN ACCESS

DOI:
dx.doi.org/10.17504/protocols.io.bkrckv2w

Protocol Citation: Andreea S 2020. Measuring the amount of bacteria in a soil sample.
protocols.io
<https://dx.doi.org/10.17504/protocols.io.bkrckv2w>

License: This is an open access protocol distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Protocol status: Other
 The protocol is developed based on literature and has not been tested yet.

Created: Sep 03, 2020

Last Modified: Oct 24, 2020

PROTOCOL integer ID:
 41476

ABSTRACT

Colony Forming Units (c.f.u) is a unit that is used in microbiology to estimate the number of viable bacteria or fungal cells in a sample. It also depends on their ability to multiply under controlled conditions. In the paper published by *El-Hassan and Gowen, 2006*, they analyzed various formulations of *Bacillus subtilis* by counting the CFU of *B. subtilis* present in every formulated product.

CITATION

S. A. El-Hassan and S. R. Gowen (2006). Formulation and Delivery of the Bacterial Antagonist *Bacillus subtilis* for Management of Lentil Vascular Wilt Caused by *Fusarium oxysporum* f. sp. *lentis*. Journal of Phytopathology, Volume 154, Issue 3.

LINK

<https://doi.org/10.1111/j.1439-0434.2006.01075.x>

CFU determination

1 Colony Forming Units (CFU) can be determined by estimating the OD of spore suspension using a

tube-reading spectrophotometer adjusted at 1.978 [corresponding to $8.5 \cdot 10^{10}$ CFU/ml] at 600nm absorbance wavelength

- 2 The formulation will be placed on sterile aluminum foil in pans and air-dried for 24:00:00 with occasional stirring in a laminar airflow cabinet.
- 3 Dried formulations (35% moisture content) of *B. mycoides* will be passed through a 250µm mesh sieve to attain the desired particle size.
- 4 Pack in sterilized polypropylene bags, seal and store at room temperature prior to use.
- 5 Count CFUs to estimate the number of viable propagules of *B. mycoides* using the standard dilution platin method described in step 6.

Standard dilution method

- 6 Take three 1 g aliquots of the dried powder and place in 99 mL sterile PBST solution (this will include PBS + 0.05 % (v/v) Tween 20). Stir magnetically at high speed for 00:15:00. Now dilute this suspension with approximately and take 0.2 mL of this suspension and plate on Nutrient Agar (NA) media.