

Norsk Matanalyse
(The Norwegian Institute for Food and Environmental Analysis)

**A comparison of Bremnes Systems
Petrifilm scanner, 3M's Petrifilm reader and
manual counting for Petrifilm AC films**

Proof of principle study



Norsk Matanalyse



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Contents

1. INTRODUCTION.....	2
2. MATERIALS AND METHODS.....	2
3. RESULTS AND DISCUSSION.....	2
4. CONCLUSIONS.....	4

1. Introduction

Bacterial colonies on Petrifilm are normally counted manually by laboratory personnel or by using the 3M reader. Bremnes Systems has developed an alternative scanner based system for counting Petrifilm.

The idea behind the 3M reader is to provide consistent, automated reading and recording of results of 3M Petrifilm Plates (Aerobic, Coliform and E. coli/Coliform Count) in order to increase productivity, reduce labour costs and eliminate reading variation between laboratory personnel. Automatic data storage saves time, eliminates transcription errors and allows for easy exporting of data.

The goals of the Bremnes System are exactly the same, but, in addition, a further goal is to open the reading system for the laboratory enabling it to use any commercially available computer with a USB 2.0 port and scanner. This should further reduce costs for the laboratory.

The Norwegian Institute for Food and Environmental Analysis was contracted to compare the different reading systems: 3M's reader, Bremnes Systems scanner-based solution and visual counting by trained laboratory personnel.

The Norwegian Institute for Food and Environmental Analysis was chosen because it is Norway's largest accredited laboratory for routine analysis of food, feed, water and environmental samples and is the National Reference Laboratory for milk and milk products within the EU framework.

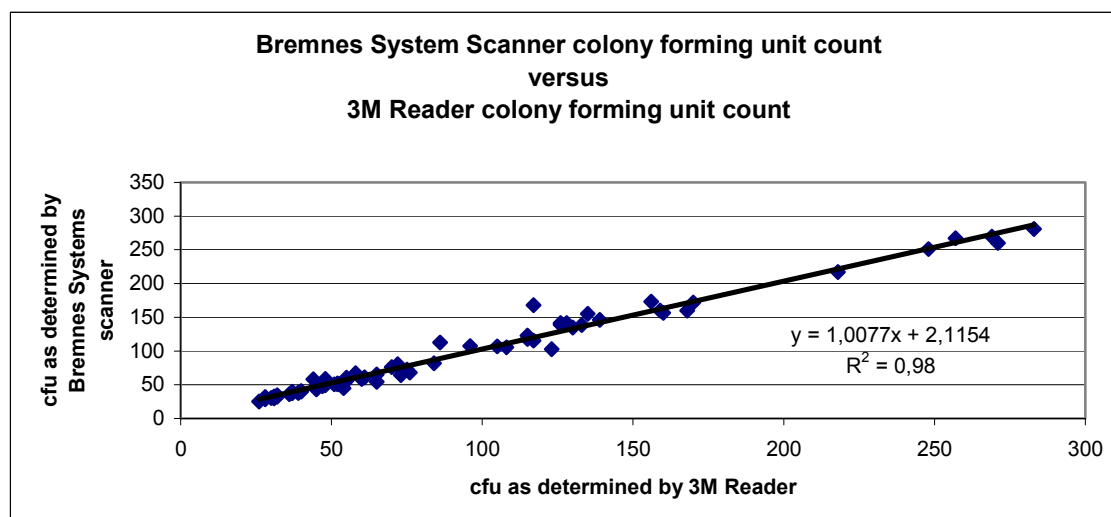
2. Materials and Methods

Petrifilm AC films were inoculated with samples obtained during routine product testing. Samples ranged from processed foods, meat, poultry, dairy products and environmental surface samples.

Petrifilms were read by 3M's reader, Bremnes Systems scanner-based solution and visual counting by trained laboratory personnel. All colony count data were recorded and plotted in MS Excel to obtain a linear regression.

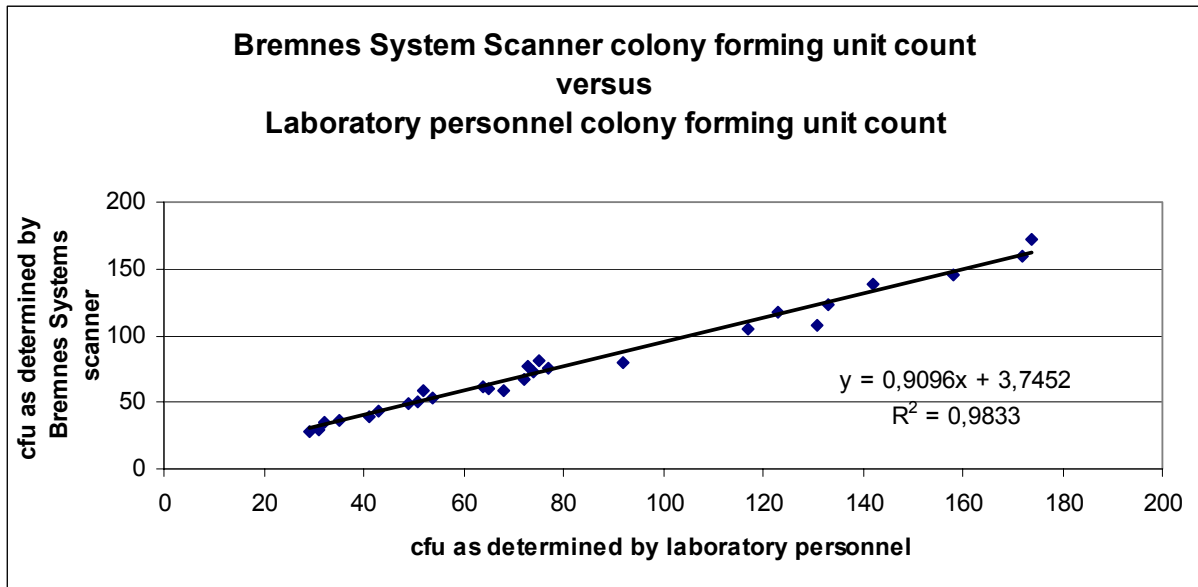
3. Results and Discussion

The data indicate that there is good consistency between results obtained by Bremnes Systems scanner-based solution and 3M's reader based on the fit and slope of the regression line.



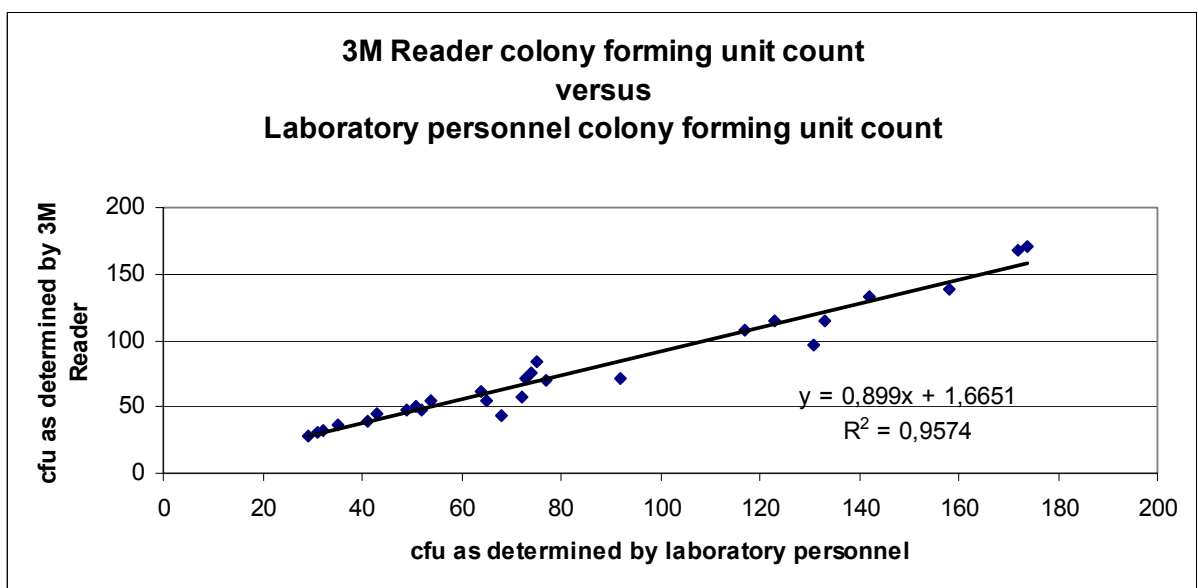
The data indicate that there is good consistency between results obtained by Bremnes Systems scanner-based solution and manual reading by eye based on the fit of the regression line.

However, it appears that analysts record about 9% higher colony counts than by Bremnes Systems scanner-based solution based on the slope of the regression line.

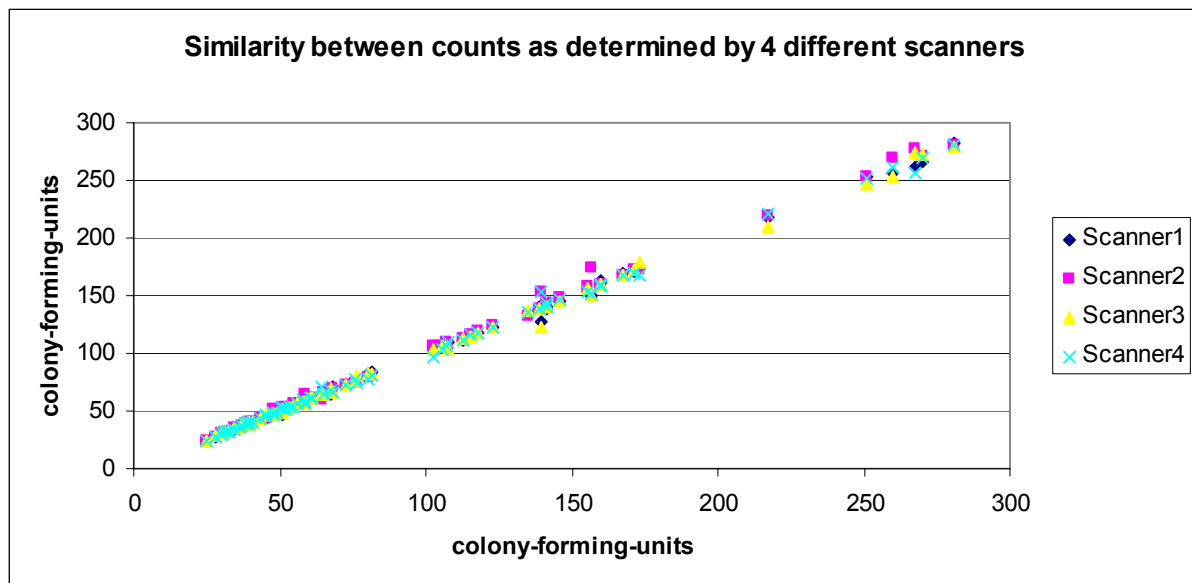


The data indicate that there is good consistency between results obtained by 3M’s reader and manual reading by eye based on the fit of the regression line however the fit is slightly worse than between Bremnes Systems solution and manual reading by laboratory personnel.

Analysts obtain about 10% higher colony counts than by 3M’s reader based on the slope of the regression line.



Four different scanners were tested against each other to check the reproducibility of colony counts. The data obtained by the four different scanners were within a few percent of each other.



4. Conclusions

Based on the data obtained in this preliminary study, it appears that Bremnes Systems has developed software enabling reliable and reproducible counting of Petrifilm AC films on the same level as 3M's reader.