

Apple orchard air microbiome study

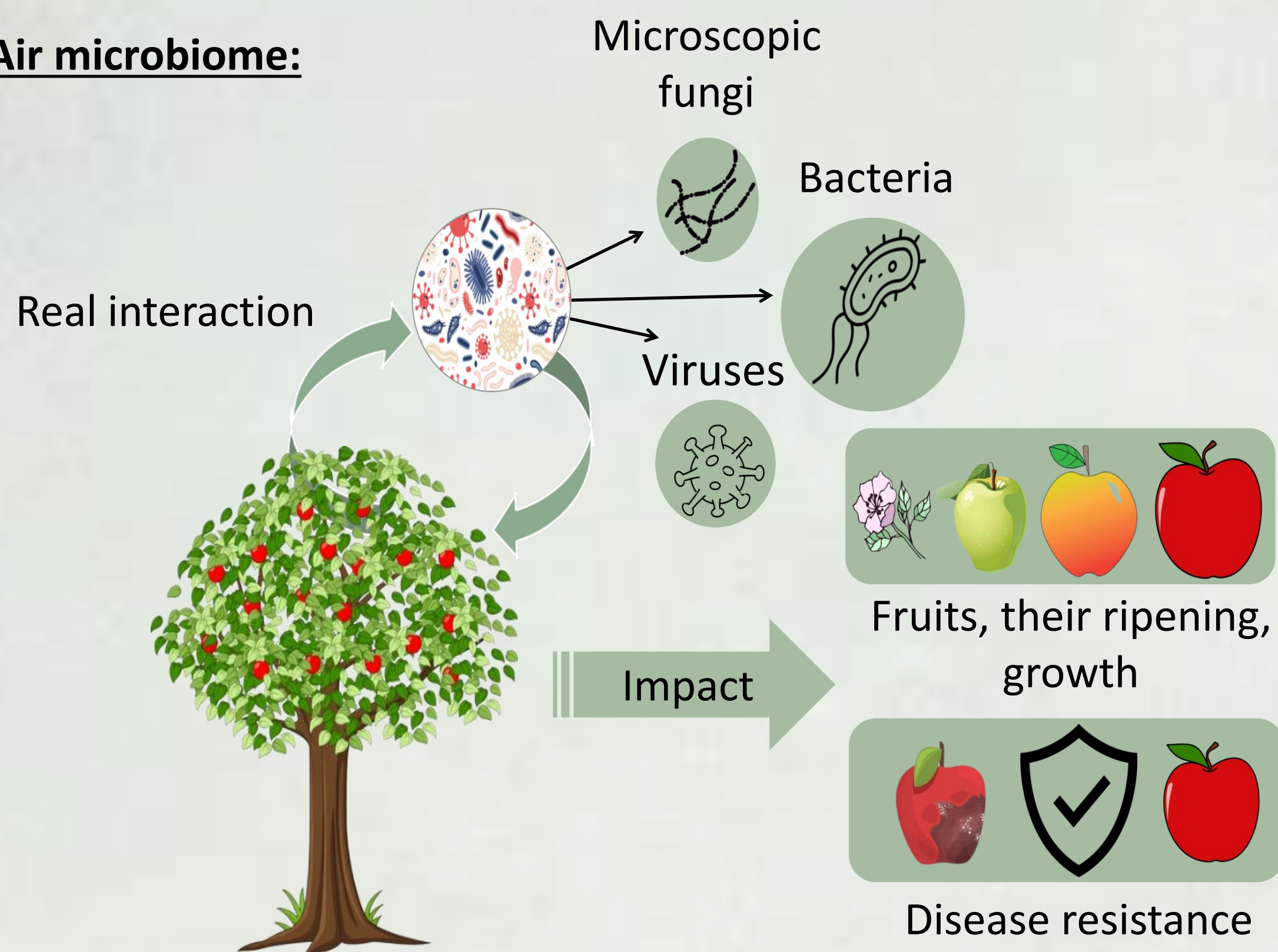


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Introduction

Air microbiome:



Research aims

The main reason for choosing this topic was personal experiences I received from my family, which has been engaged in agriculture for generations. During fruit growing, countless problems have had to be faced and still have to be faced, such as the prevention and treatment of various infectious diseases. In our research, we aimed to study the air microbiome composition of different apple varieties in order to be able to compare the samples and thus examine the similarities and differences between the varieties. In addition, we examine what beneficial microbes are in the air, the presence of which is able to provide natural protection against infectious diseases.



Materials and methods

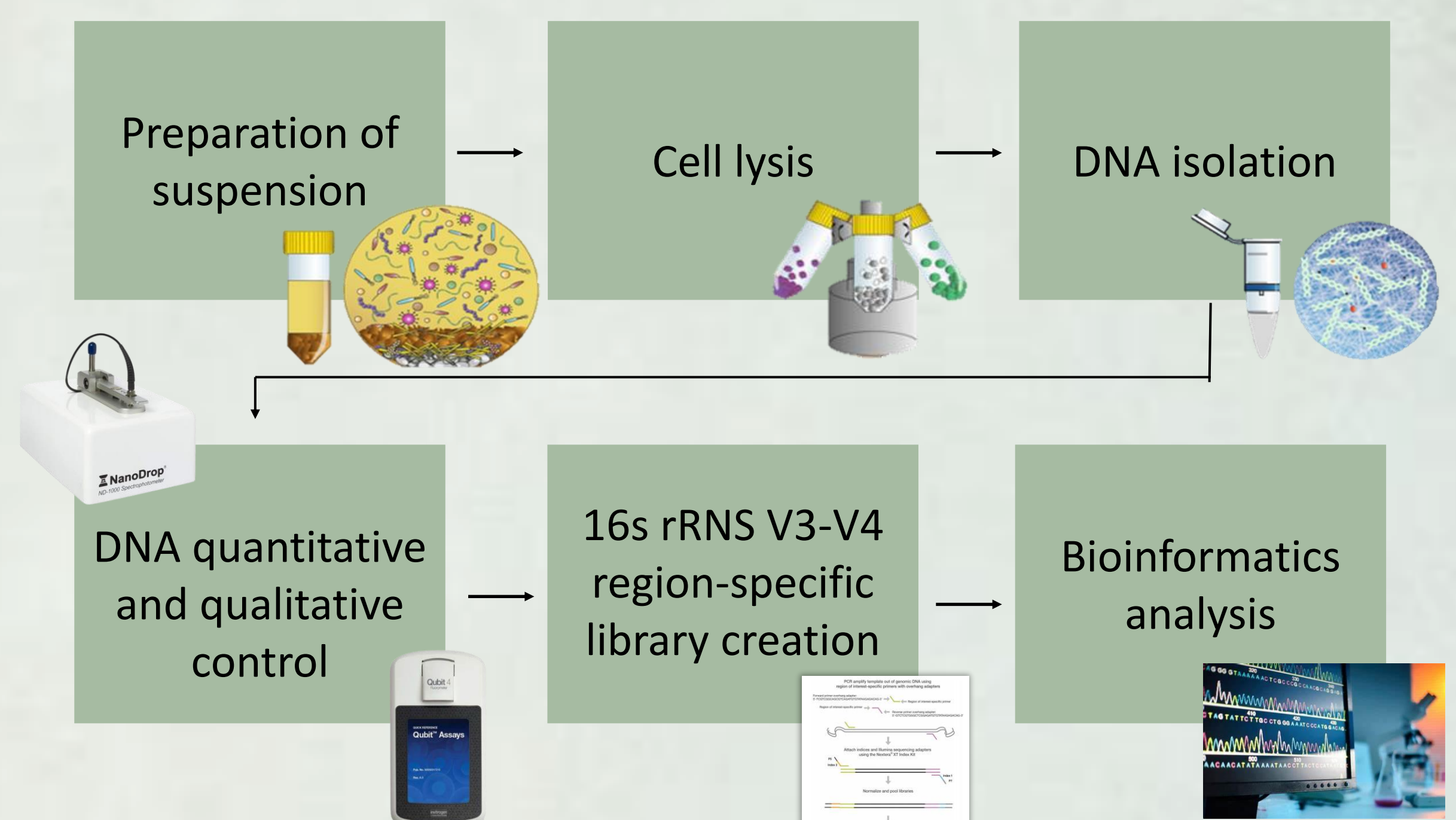
In the 2.97-hectare orchard near Komoro (Eastern Hungary), the air-microbiome composition of six different apple varieties was examined.



6 different apple varieties

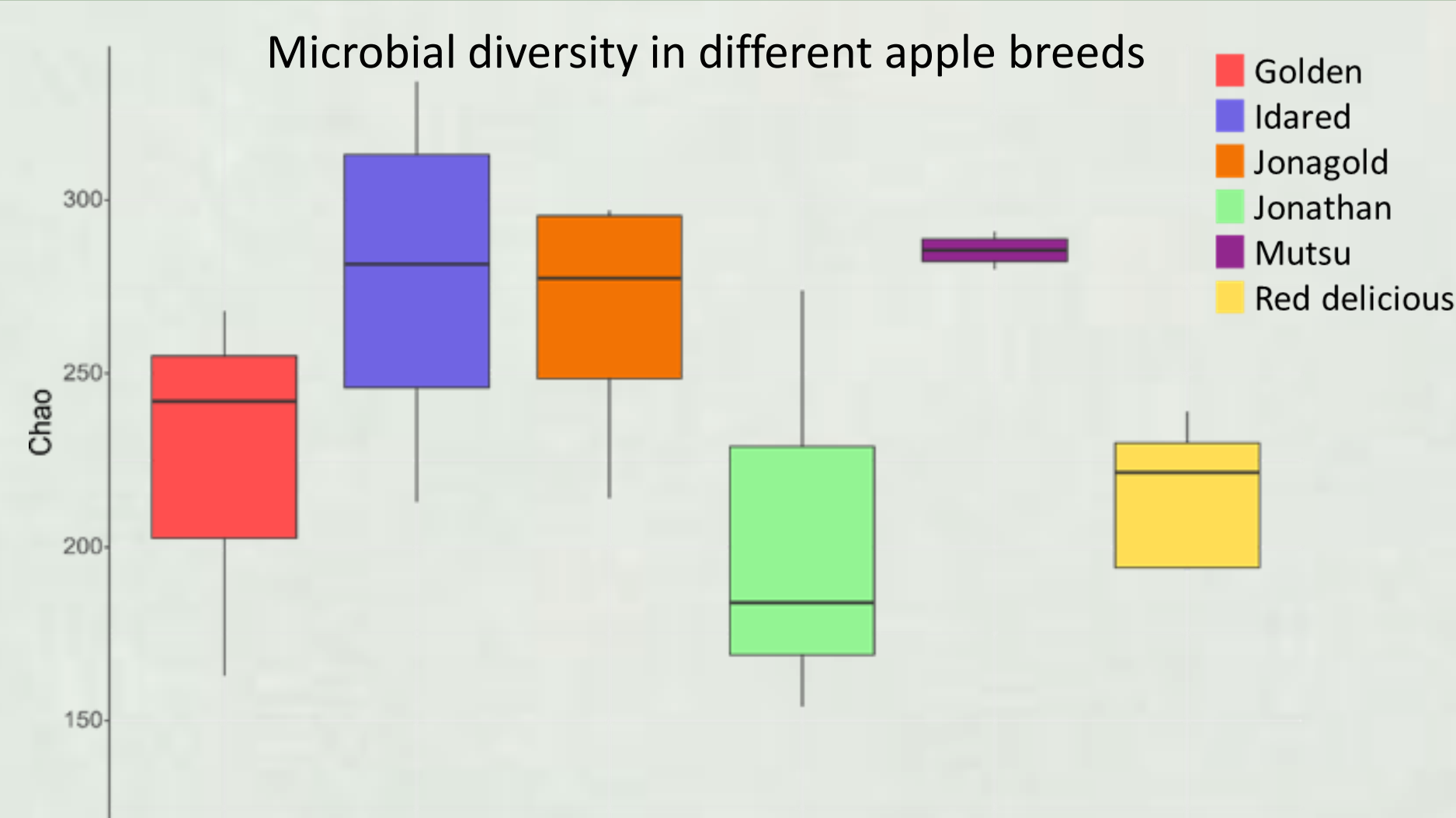


Sample collection

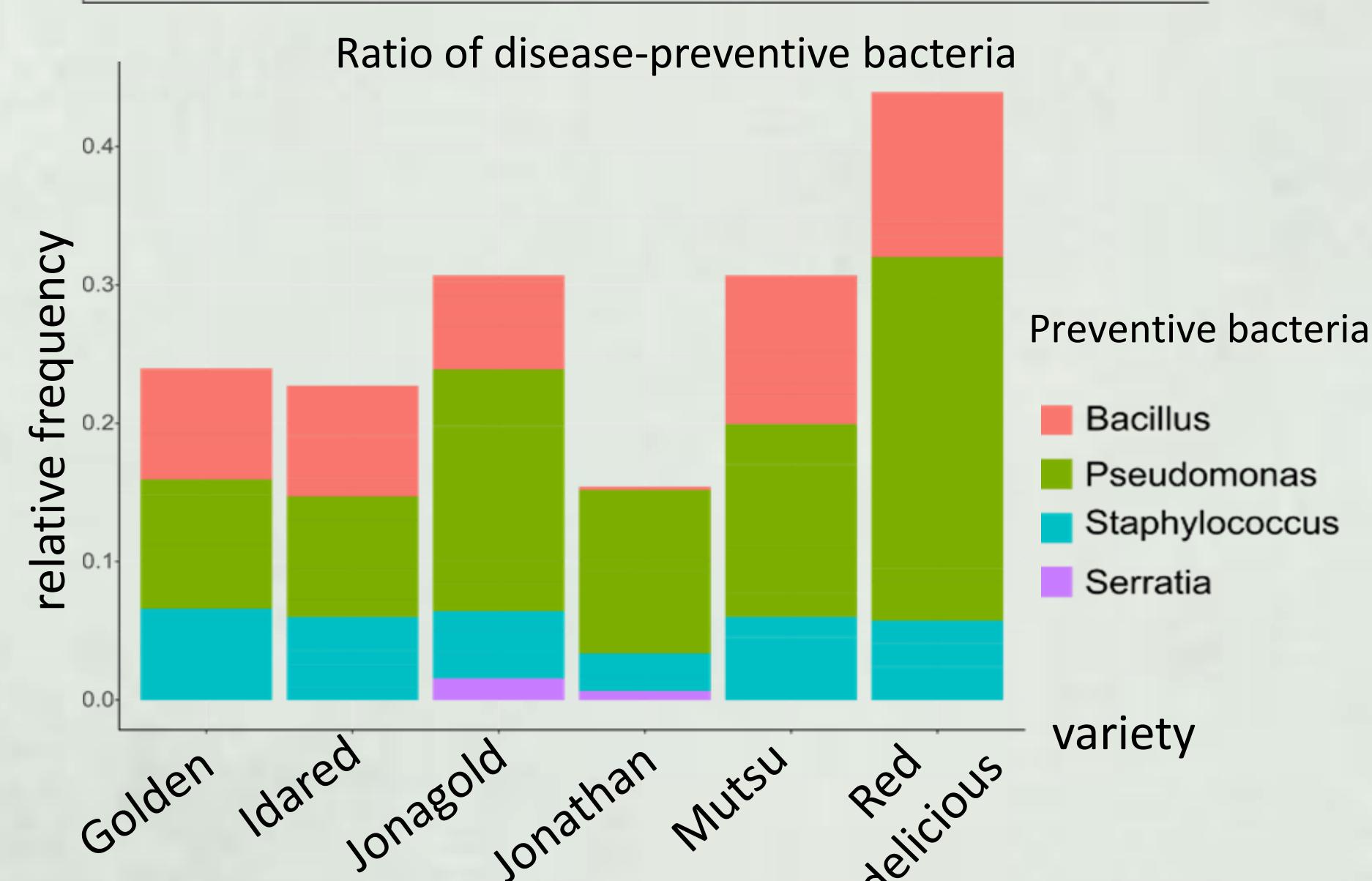


Results

We analysed which apple varieties have a more diverse air microbiome. The lowest diversity was observed in the Jonathan variety, while the highest diversity was observed in the Mutsu variety. Diversity is proportional to the viability of a community.



The ratio of disease-preventing microorganisms was examined. The highest percentage was observed in the Red delicious breed, while the lowest percentage was observed in the Jonathan breed. Our studies proved that diversity is proportional to health, as the species with the least diversity had the lowest number of protective microorganisms.



Future plans

We would like to continue our research with the involvement of additional plantations, in order to find areas where apples are less likely to get sick, and here to look for new air constituents that correlate with health, to introduce farmers to these beneficial microbes and their significance, to create the composition of the plantations in such a way that the varieties have a beneficial effect on each other, thereby reducing the use of pesticides.

References

- Derikvand F, Bazgir E, El Jarroudi M, Darvishnia M, Mirzaei Najafgholi H, Laasli SE, Lahlali R. Unleashing the Potential of Bacterial Isolates from Apple Tree Rhizosphere for Biocontrol of *Monilinia laxa*: A Promising Approach for Combatting Brown Rot Disease. *J Fungi (Basel)*. 2023 Aug 5;9(8):828. doi: 10.3390/jof9080828.
- J. Microbiol. Biotechnol.* (2017), 27(12), 2089–2093 <https://doi.org/10.4014/jmb.1709.09027>