# Comparison of life history strategies in monokaryotic versus dikaryotic growth stages of fungi

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# Abstract

The fungal life cycle is highly diverse in different fungal groups. For most wood-decaying basidiomycetes, their life cycle includes two different mycelial stages, a primary monokaryotic and a secondary dikaryotic stage, the latter establishing after anastomosis of the primary mycelium.

In this study, the growth patterns of monokaryotic and dikaryotic mycelia were investigated in two different common garden experiments. Monokaryotic and dikaryotic mycelia were established from fruit bodies of the six different wood-decay species *Fomitopsis pinicola, Gloeophyllum sepiarium, Meruliopsis taxicola, Phellopilus nigrolimitatus, Phellinus viticola* and *Trichaptum abietinum*. The pairs of monokaryotic and dikaryotic mycelia were used to investigate differences in growth rate (hyphal extension rate on agar) and decomposition rate of spruce (*Picea abies*) wood blocks.

It was found during the growth experiment that dikaryons formed a more extensive mycelium than monokaryons. Further analysis revealed that species and karyotype, without interactions, both had an impact on mycelial size. The decomposition experiment revealed no difference in decay ability between monokaryons and dikaryons. Further analysis showed that species had a high effect on the result. No correlation between growth and decomposition could be found.

Dikaryons performed better than monokaryons in the growth experiment which implies that they have a better fitness than monokaryons, but under optimal conditions. Further studies on this topic are needed to assess the fitness for monokaryons and dikaryons under more natural conditions.

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# 1 Introduction

The kingdom of fungi is a highly diverse group of organisms consisting of about 150 000 described species (Cheek et al. 2020, James et al. 2020, Stajich et al. 2009). Fungi are versatile group of organisms and can be found in nearly every type of environment, ranging from marine, aquatic, to terrestrial. Biotic factors such as plants and other organisms, and abiotic factors such as temperature, pH and salinity contribute to the diversity of fungi (Frąc et al. 2018). To face the challenges of fluctuating environments, fungi have evolved different ecological strategies and adapted to diverse habitats. Some fungi are symbionts and endophytes such as lichens, while some are parasites and pathogens of plants and animals, and others are saprotrophs. (Chan 2021, Lundell et al. 2010., Tedersoo et al. 2014).

The fungal phylum Basidiomycetes, accounts for about 35% of described species (Lundell et al. 2010., Ramírez et al. 2000, Zmitrovich et al. 2014). Ecologically, basidiomycetes have many different roles within the forest ecosystems, but most basidiomycetes are saprotrophs, meaning that they feed of dead residues (Ramírez et al. 2000). One such group of saprotrophic fungi are the wood-decomposers that often can be found on stumps, logs, or other types of dead wood (Tura et al. 2018). Saprotrophic basidiomycetes are key players in the forest ecosystems because of their ability to decompose dead wood and hence, contribute to the recycling of nutrients. (Moose et al. 2019., Olou et al. 2019).

The saprotrophic wood-decaying basidiomycetes can roughly be divided into two types; white rot and brown rot fungi (Baldrian 2008, Riley et al. 2014), according to the type of decay they cause (Fukasawa 2021). White rot fungi is a large and heterogeneous group consisting of many species from different orders such as Polyporales, Agaricales and Hymenochaetales, and they are physiologically distinct from other saprotrophic fungi (Osono 2007, Skrede 2021). White rot fungi are ecologically important as they have the ability to decompose the main components of wood (lignin, cellulose, and hemicellulose). On the contrary, brown rot fungi only decompose cellulose and hemicellulose in woody debris leaving lignin almost intact during the decomposition process (Chan 2021).

All organisms, ranging from single-cell eukaryotes, to plants, fungi, and animals, undergo a life cycle with different stages. A biological life cycle can be defined as “the series of forms into which a living thing changes as it develops” (*Oxford learner’s dictionary).*

A vast diversity of types of life cycles can be found in nature. The life cycle is one of the most important features that will influence many aspects of the organism's biology including the evolution of different traits, such as developmental processes, types of reproduction, adaptations to its environment, types of dispersal and ecological success (Heesch et al. 2021).

Fungi have a highly diverse life cycle, and most of them reproduce by producing both sexual and asexual spores (Boddy & Hiscox 2016). The life cycle of most basidiomycetes includes two different mycelial stages, the monokaryotic and dikaryotic stages, where the latter is believed to make up the dominant stage of their life cycle. The monokaryotic hyphae include one haploid nucleus while the dikaryotic hyphae includes two. The monokaryons are established from haploid spores being spread from the fruit bodies. If the spores, also known as basidiospores, land on a suitable substrate, they germinate and give rise to a primary, monokaryotic mycelium (Hiscox et al. 2010, Jenssen et al. 2020, Nieuwenhuis et al. 2010). Two monokaryotic hyphae that are genetically distinct and possess different mating types undergo plasmogamy and produce a dikaryotic mycelium. In some fungi, there are a delay between plasmogamy and karyogamy that results in a dikaryon phase, which is true for Basidiomycota (Anderson et al. 2007, Coelho et al. 2007). The dikaryons make up the dominant vegetative stage of the life cycle and can grow for a long time, even thousands of years (Schardi and Craven 2003). An individual of the species *Armillaria* was estimated, through observation of growth rate, to be the minimum age of 2500 years (Anderson et al. 2018). Under certain conditions, the dikaryon may produce a fruiting body that includes reproductive (hymenial) tissue with specialized cells called basidia, in which karyogamy and meiosis happen. (Banuett 2015, Fricker et al. 2017, Nieuwenhuis et al. 2010). Clamp connections is one feature, formed by many dikaryons, that can be used to distinguish monokaryons from dikaryons for many basidiomycete fungi. It is a hyphal structure that develops during cell division and makes it possible to distribute two nuclei appropriately across cells in order to maintain the dikaryotic stage, in which each cell contains two nuclei, one from each monokaryon (Krings et al. 2011, Tian et al. 2020).

As sessile organisms, most wood-decaying fungi disperse mainly through airborne basidiospores (Edman et al. 2004). However, there have been some cases that show the ability of some individuals that are able to spread from one wood resource to another by mycelia growth. This is true for the species *Armillaria*, in which individuals have spread over extreme distances by rhizomorphs (Anderson et al. 2018)

One common conception is that monokaryotic spores colonize a wood-resource and grows for a limited time. The time spent as monokaryotic mycelia is likely affected by several factors, including access to a compatible hypha to fuse with. There are findings that show evidence of an inverse relationship between the number of colonies of a species in an area and the number of individuals that are monokaryons (Nieuwenhuis et al. 2013, Stenlid 1994). It has been suggested that the dikaryotic phase is more stable and long-lived as compared to the short-lived monokaryons, but in areas where the availability to find a mate is restricted, the monokaryotic phase may persists for a long time (as long as it is supplied with nutrients) and this can be true for rare species in which the number of possible mates are low (Crockatt et al. 2008, Hiscox et al. 2010, Moore and Pukkila 1985). Even though there are limited studies on this topic (Crockatt et al. 2008), some studies show that monokaryons can persists as monokaryons in nature for quite some time. Monokaryons of species *Bjerkandrea adusta* and *Coriolus versicolor* were recovered near the surface of a log up to two years after the tree was cut (Coates and Rayner 1985). Furthermore, monokaryons of species *Heterobasidion annosum* had not become dikaryons after 12 months in inoculated roots, and they were pathogenic and showed the same level of virulence as dikaryons (Garbaletto et al. 1997). If the dikaryotic phase is supposed to be more stable than the monokaryotic stage, what could possibly explain the presence of *H. annosum* monokaryons in inoculated roots? Garbaletto et al. (1997) explained that the presence of monokaryons could be due to high primary infections by single spores or events of de-dikaryotization (in which a dikaryon converse into a pair of monokaryons) due to stressful conditions and that they manage to stay as monokaryons because of the isolating nature inside a substrate in which the monokaryons are isolated from the outside (Garbaletto et al. 1997).

Both monokaryons and dikaryons are exposed to similar stress factors during colonization and the utilization of woody resources. Because they keep depleting the available resource during their lifetime, they need to be able to continually spread to new and untapped resources. Most studies on the ecology of basidiomycetes have focused on dikaryons and overlooked the monokaryotic stage, because it was thought to be only a temporary stage (Crockatt et al. 2008, Fryar et al. 2002, Hiscox et al. 2010), but some studies have produced evidence of difference in performances between monokaryons and dikaryons in terms of growth rate (hyphal extension rate) and wood decomposition rate (Hiscox et al. 2010). In a study conducted by Fryer et al. (2002) they found that the hyphal extension rate varied between monokaryons and dikaryons among different species. For some species, monokaryons grew faster than some dikaryons and vice versa (Fryer et al. 2002). They argued that the monokaryotic stage could influence community dynamics. Similar, monokaryons of *Phellinus weirii* grew slower than dikaryons (Hansen 1979), while monokaryons of *Hericium coralloides* had, on average, a higher extension rate than dikaryons, though the differences were only significant for isolates on 15 °C (Crockatt et. al 2008).

Another observation is that monokaryons produce a more fluffy and explorative mycelia, while dikaryons may produce a denser mycelium. The monokaryons of the species *Corpinus cinereus* produce thinner hyphae, while dikaryons produce a denser mycelium (Kües 2000). Hansen (1979) found that monokaryons of species *Phellinus weirii* had a more fluffy and off-white mycelia, compared to a browner and flatter mycelium of dikaryons (Hansen 1979). The difference in mycelia density could be explained by the needs of each stage. We could hypothesize that the nature of fluffier mycelium among monokaryons contributes to finding another monokaryon to mate with easier, unlike the denser mycelium in dikaryons. A denser mycelium is better suited to cover a wood resource and increase decomposition to obtain nutrients for the productions of fruit bodies and completing its life cycle. (Serghi et al. 2021).

Other studies have shown variance in wood decomposition rate between monokaryons and dikaryons varies between species. Amburgey (1970) found that dikaryons of the species *Lenzites trabea* have a higher decomposition rate than monokaryons. On the contrary, monokaryons of *Antrodia vaillantii* and *Ganoderma applanatum* showed a higher decomposition rate than dikaryons (Hiscox et al. 2010). The decomposition rate is inherited to the decomposer ability but influenced by abiotic factors such as temperature, pH, water availability, nutrient characteristics, and competition. There is a high variation in decomposition rate between species, as well as between monokaryons and dikaryons, and it lies in the relationship between ecological strategies and metabolic rate (Boddy et al. 2001). It has long been assumed that there could be a correlation between growth rate and decomposition rate as slow-growing fungi with high mycelia density could decompose wood faster than fast-growing fungi with low mycelia density could (Boddy 2001, Lustenhouwer et al. 2020). Through Lustenhouwer et al (2020) experiments, a positive correlation between growth rate and decomposition rate could be found. This positive relationship eventually leveled off for the fastest growing isolates. A negative correlation between growth rate and mycelia density was found. (Lustenhouwer et al. 2020).

The role of monokaryons within basidiomycetes life cycle is poorly understood because of the limited study on the subject and it is clear that this needs more study. The aim of this thesis is to investigate the fitness of monokaryons and dikaryons, in terms of growth and decomposition, for different species of saprotrophic basidiomycete fungi. Through two different experiments known as the common garden experiments I will evaluate the growth capacity (hyphal extension rate) of monokaryotic and dikaryotic stages and evaluate the capacity of each stage to decompose *Picea abies*, commonly known as Norway spruce. The results from these experiments will be statistically analyzed to observe any systematic differences between the two stages. I hypothesize that (1) dikaryotic mycelium will decompose spruce more rapidly than monokaryotic mycelium of the same strain, (2) the monokaryotic mycelia will have a faster extension rate, but less dense mycelia than dikaryotic strains and (3) mycelia density and decomposition rate will be correlated.

# 2 Material and Methods

## 2.1 Sampling

Fruit bodies from five different species of basidiomycete fungi *Fomitopsis pinicola* ((SW) P. Karst), *Gloeophyllum sepiarium* ((Wulfen) P. Karst), *Phellopilus nigrolimitatus* ((Romell) Niemelä, T.Wagner & M.Fisch), *Phellinus viticola* ((Schweinitz) Donk) and *Trichaptum abietinum* ((Dicks.) Ryvarden) were collected from Skotjernfjellet, a forest located in Nordmarka, 55 km north of Oslo, Norway, during the fall (September-October) 2021. The fruit bodies used in these experiments were collected from dead spruce logs from areas within 1.2 $km^2$ of Skotjernfjell. Another species of fungi, *Meruliopsis taxicola* ((Pers.) Bondartsev), was collected from Tyrifjorden during the fall of 2020. All specimens of *M. taxicola* were collected from dead spruce logs.

For all species, small parts of the fruit bodies were carefully removed using a knife and placed in small paper bags for storage. Once in the lab, the samples were stored at 4 °C.

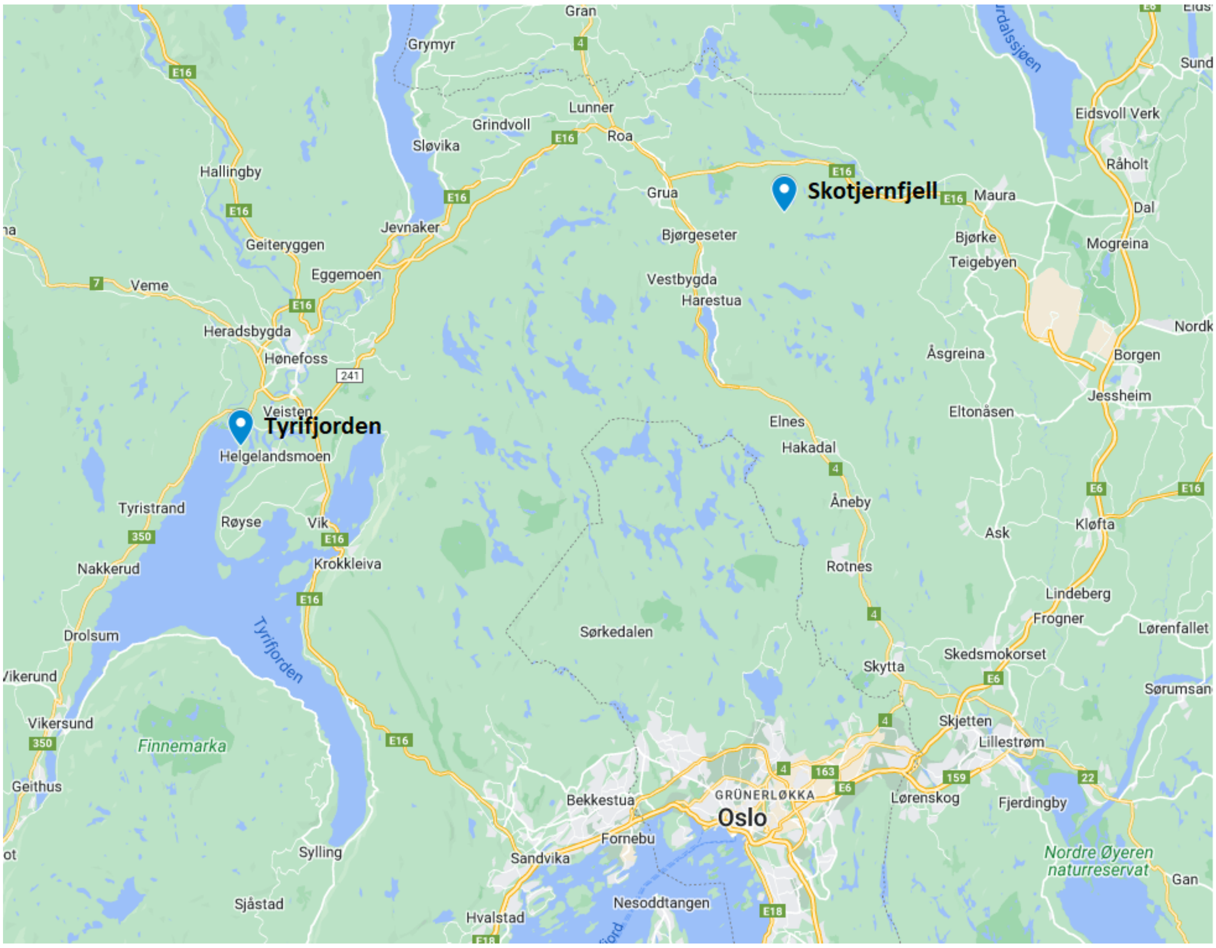


Figure 1: map illustrating the two sampling locations of Tyrifjorden and Skotjernfjell. Five fruit bodies of species of *F. pinicola, G. sepiarium, M. taxicola, P. viticola, P. nigrolimitatus, T. abietinum* was collected during the fieldwork of fall 2021.

The six species were used in two different common garden experiments where both growth rate (hyphal extension rate) and decay rate were measured and compared between the monokaryotic and dikaryotic stage in each species.

Table 1: all samples that were collected for this study. All samples were collected during fall (August – September) 2021. The columns describe the location for the harvest, coordinates, species name, sample-ID, monokaryon and dikaryon ID given when cultures were made.

| Location | Coordinates | Species | Sample-ID | Monokaryon-ID | Dikaryon-ID |
|---|---|---|---|---|---|
| Skotjernfjell, Viken | 60°14'21N, 10°47'41E | *Fomitopsis pinicola* | KH_fompin_1 | KH_fompin_M1 | KH_fompin_D1 |
| Skotjernfjell, Viken | 60°14'21N, 10°47'41E | *Fomitopsis pinicola* | KH_fompin_2 | KH_fompin_M2 | KH_fompin_D2 |
| Skotjernfjell, Viken | 60°14'22N, 10°47'39E | *Fomitopsis pinicola* | KH_fompin_3 | KH_fompin_M3 | KH_fompin_D3 |
| Skotjernfjell, Viken | 60°14'22N, 10°47'66E | *Fomitopsis pinicola* | KH_fompin_4 | KH_fompin_M4 | KH_fompin_D4 |
| Skotjernfjell, Viken | 60°14'22N, 10°47'41E | *Fomitopsis pinicola* | KH_fompin_5 | KH_fompin_M5 | KH_fompin_D5 |
| Skotjernfjell, Viken | 60°24'00N, 10°79'71E | *Fomitopsis pinicola* | KH_fompin_6 | KH_fompin_M6 | KH_fompin_D6 |
| Skotjernfjell, Viken | 60°24'00N, 10°79'62E | *Fomitopsis pinicola* | KH_fompin_7 | KH_fompin_M7 | KH_fompin_D7 |
| Skotjernfjell, Viken | 60°24'08N, 10°79'90E | *Fomitopsis pinicola* | KH_fompin_8 | KH_fompin_M8 | KH_fompin_D8 |
| Skotjernfjell, Viken | 60°23'99N, 10°79'68E | *Fomitopsis pinicola* | KH_fompin_9 | KH_fompin_M9 | KH_fompin_D9 |
| Skotjernfjell, Viken | 60°24'04N, 10°79'79E | *Fomitopsis pinicola* | KH_fompin_10 | KH_fompin_M10 | KH_fompin_D10 |
| Skotjernfjell, Viken | 60°24'11N, 10°79'68E | *Fomitopsis pinicola* | KH_fompin_11 | KH_fompin_M11 | KH_fompin_D11 |
| Skotjernfjell, Viken | 60°14'24N, 10°47'49E | *Gloeophyllum sepiarium* | KH_glosep_1 | KH_glosep_M1 | KH_glosep_D1 |
| Skotjernfjell, Viken | 60°14'16N, 10°47'28E | *Gloeophyllum sepiarium* | KH_glosep_2 | KH_glosep_M2 | KH_glosep_D2 |
| Skotjernfjell, Viken | 60°24'09N, 10°79'61E | *Gloeophyllum sepiarium* | KH_glosep_3 | KH_glosep_M3 | KH_glosep_D3 |
| Skotjernfjell, Viken | 60°14'48N, 10°47'87E | *Gloeophyllum sepiarium* | KH_glosep_4 | KH_glosep_M4 | KH_glosep_D4 |
| Skotjernfjell, Viken | 60°14'51N, 10°47'84E | *Gloeophyllum sepiarium* | KH_glosep_5 | KH_glosep_M5 | KH_glosep_D5 |
| Skotjernfjell, Viken | 60°14'50N, 10°47'77E | *Gloeophyllum sepiarium* | KH_glosep_6 | KH_glosep_M6 | KH_glosep_D6 |
| Skotjernfjell, Viken | 60°14'48N, 10°47'88E | *Gloeophyllum sepiarium* | KH_glosep_7 | KH_glosep_M7 | KH_glosep_D7 |
| Skotjernfjell, Viken | 60°24'19N, 10°79'81E | *Gloeophyllum sepiarium* | KH_glosep_8 | KH_glosep_M8 | KH_glosep_D8 |
| Tyrifjorden, Viken | 60°11'93N, 10°79'81E | *Meruliopsis taxicola* | KH_mertax_10 | KH_mertax_M10 | KH_mertax_D10 |
| Tyrifjorden, Viken | 60°11'81N, 10°19'38E | *Meruliopsis taxicola* | KH_mertax_13 | KH_mertax_M13 | KH_mertax_D13 |
| Tyrifjorden, Viken | 60°11'69N, 10°19'17E | *Meruliopsis taxicola* | KH_mertax_14 | KH_mertax_M14 | KH_mertax_D14 |
| Tyrifjorden, Viken | 60°11'53N, 10°19'09E | *Meruliopsis taxicola* | KH_mertax_15 | KH_mertax_M15 | KH_mertax_D15 |
| Tyrifjorden, Viken | 60°11'42N, 10°19'04E | *Meruliopsis taxicola* | KH_mertax_16_ | KH_mertax_M16 | KH_mertax_D16 |

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|---|---|---|---|---|---|
| Tyrifjorden, Viken | 60°11'30N, 10°18'98E | *Meruliopsis taxicola* | KH_mertax_17 | KH_mertax_M17 | KH_mertax_D17 |
| Tyrifjorden, Viken | 60°11'30N, 10°18'96E | *Meruliopsis taxicola* | KH_mertax_18 | KH_mertax_M18 | KH_mertax_D18 |
| Tyrifjorden, Viken | 60°10'65N, 10°18'73E | *Meruliopsis taxicola* | KH_mertax_19 | KH_mertax_M19 | KH_mertax_D19 |
| Tyrifjorden, Viken | 60°10'23N, 10°18'35E | *Meruliopsis taxicola* | KH_mertax_21 | KH_mertax_M21 | KH_mertax_D21 |
| Skotjernfjell, Viken | 60°24'07N, 10°79'42E | *Phellopilus nigrolimitatus* | KH_phenig_1 | KH_phenig_M1 | KH_phenig_D1 |
| Skotjernfjell, Viken | 60°24'05N, 10°79'60E | *Phellopilus nigrolimitatus* | KH_phenig_2 | KH_phenig_M2 | KH_phenig_D2 |
| Skotjernfjell, Viken | 60°24'01N, 10°79'61E | *Phellopilus nigrolimitatus* | KH_phenig_3 | KH_phenig_M3 | KH_phenig_D3 |
| Skotjernfjell, Viken | 60°24'20N, 10°79'83E | *Phellopilus nigrolimitatus* | KH_phenig_4 | KH_phenig_M4 | KH_phenig_D4 |
| Skotjernfjell, Viken | 60°14'52N, 10°47'66E | *Phellopilus nigrolimitatus* | KH_phenig_5 | KH_phenig_M5 | KH_phenig_D5 |
| Skotjernfjell, Viken | 60°14'55N, 10°47'75E | *Phellopilus nigrolimitatus* | KH_phenig_6 | KH_phenig_M6 | KH_phenig_D6 |
| Skotjernfjell, Viken | 60°14'52N, 10°47'81E | *Phellopilus nigrolimitatus* | KH_phenig_7 | KH_phenig_M7 | KH_phenig_D7 |
| Skotjernfjell, Viken | 60°14'49N, 10°47'82E | *Phellopilus nigrolimitatus* | KH_phenig_8 | KH_phenig_M8 | KH_phenig_D8 |
| Skotjernfjell, Viken | 60°14'47N, 10°47'86E | *Phellopilus nigrolimitatus* | KH_phenig_9 | KH_phenig_M9 | KH_phenig_D9 |
| Skotjernfjell, Viken | 60°24'22N, 10°79'82E | *Phellopilus nigrolimitatus* | KH_phenig_10 | KH_phenig_M10 | KH_phenig_D10 |
| Skotjernfjell, Viken | 60°14'52N, 10°47'77E | *Phellopilus nigrolimitatus* | KH_phenig_11 | KH_phenig_M11 | KH_phenig_D11 |
| Skotjernfjell, Viken | 60°24'2N, 10°79'83E | *Phellinus viticola* | KH_phevit_1 | KH_phevit_M1 | KH_phevit_D1 |
| Skotjernfjell, Viken | 60°14'22N, 10°47'41E | *Phellinus viticola* | KH_phevit_2 | KH_phevit_M2 | KH_phevit_D2 |
| Skotjernfjell, Viken | 60°14'15N, 10°47'21E | *Phellinus viticola* | KH_phevit_3 | KH_phevit_M3 | KH_phevit_D3 |
| Skotjernfjell, Viken | 60°14'23N, 10°47'38E | *Phellinus viticola* | KH_phevit_4 | KH_phevit_M4 | KH_phevit_D4 |
| Skotjernfjell, Viken | 60°14'22N, 10°47'49E | *Phellinus viticola* | KH_phevit_5 | KH_phevit_M5 | KH_phevit_D5 |
| Skotjernfjell, Viken | 60°24'09N, 10°79'60E | *Phellinus viticola* | KH_phevit_6 | KH_phevit_M6 | KH_phevit_D6 |
| Skotjernfjell, Viken | 60°24'05N, 10°79'60E | *Phellinus viticola* | KH_phevit_7 | KH_phevit_M7 | KH_phevit_D7 |
| Skotjernfjell, Viken | 60°14'47N, 10°47'84E | *Phellinus viticola* | KH_phevit_8 | KH_phevit_M8 | KH_phevit_D8 |
| Skotjernfjell, Viken | 60°14'51N, 10°47'81E | *Phellinus viticola* | KH_phevit_9 | KH_phevit_M9 | KH_phevit_D9 |
| Skotjernfjell, Viken | 60°14'52N, 10°47'77E | *Phellinus viticola* | KH_phevit_10 | KH_phevit_M10 | KH_phevit_D10 |
| Skotjernfjell, Viken | 60°14'23N, 10°47'48E | *Trichaptum abietinum* | KH_triabi1_1 | KH_triabi1_M1 | KH_triabi1_D1 |
| Skotjernfjell, Viken | 60°14'25N, 10°47'49E | *Trichaptum abietinum* | KH_triabi1_2 | KH_triabi1_M2 | KH_triabi1_D2 |

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|---|---|---|---|---|---|
| Skotjernfjell, Viken | 60°14'20N, 10°47'51E | *Trichaptum abietinum* | KH_triabi1_3 | KH_triabi1_M3 | KH_triabi1_D3 |
| Skotjernfjell, Viken | 60°14'25N, 10°47'51E | *Trichaptum abietinum* | KH_triabi1_4 | KH_triabi1_M4 | KH_triabi1_D4 |
| Skotjernfjell, Viken | 60°14'24N, 10°47'49E | *Trichaptum abietinum* | KH_triabi1_5 | KH_triabi1_M5 | KH_triabi1_D5 |
| Skotjernfjell, Viken | 60°14'24N, 10°47'50E | *Trichaptum abietinum* | KH_triabi1_6 | KH_triabi1_M6 | KH_triabi1_D6 |
| Skotjernfjell, Viken | 60°14'29N, 10°47'48E | *Trichaptum abietinum* | KH_triabi1_7 | KH_triabi1_M7 | KH_triabi1_D7 |
| Skotjernfjell, Viken | 60°14'23N, 10°47'43E | *Trichaptum abietinum* | KH_triabi1_8 | KH_triabi1_M8 | KH_triabi1_D8 |
| Skotjernfjell, Viken | 60°24'00N, 10°79'62E | *Trichaptum abietinum* | KH_triabi2_9 | KH_triabi2_M9 | KH_triabi2_D9 |
| Skotjernfjell, Viken | 60°24'08N, 10°79'90E | *Trichaptum abietinum* | KH_triabi_10 | KH_triabi_M10 | KH_triabi_D10 |
| Skotjernfjell, Viken | 60°14'52N, 10°47'78E | *Trichaptum abietinum* | KH_triabi_11 | KH_triabi_M11 | KH_triabi_D11 |
| Skotjernfjell, Viken | 60°14'50N, 10°47'81E | *Trichaptum abietinum* | KH_triabi_12 | KH_triabi_M12 | KH_triabi_D12 |

## 2.2 Lab work

### 2.2.1 Culturing

#### 2.2.1.1 Monokaryotic fungal culture

A small piece of the hymenium was placed in a paper towel that had been moistened with distilled water for 2-24 hours, depending on the species. After this, small pieces of the fruit body were gently removed by a sterile scalpel and glued to the lid of a Petri dish, by using a silicon-based gel. These Petri dishes contained 2% malt extract agar with three antibiotics 10 mg/L tetracycline, 100 mg/L ampicillin, 25 mg/L streptomycin and the fungicide 1 mg/L benomyl (from now on called MEA S.T.A.B). This media was used to reduce bacterial and other fungal contaminants during basidiomycetes culture isolation. Some fungal species will release their spores straight down onto the Petri dish, while others will "shoot" their spores all over the dish. For the species that dropped their spores, the piece of the fruit body was glued on the side of the lid, and the lid was turned 1-2 times every 2 hours. For the "shooting" species, the piece of fruit body was glued in the middle of the lid and then removed and replaced with a new, clean lid after 2-3 hours. These processes were done to avoid getting aggregates of spores in the Petri dish which would make it difficult to isolate single spores. The Petri dishes were then sealed in parafilm and stored in an incubator in the dark with a constant temperature of 20 °C. The fungal spores would germinate within 2-24 hours. Using a sterile scalpel, a single germinating spore was transferred to a new Petri dish of MEA S.T.A.B, which was then sealed and incubated in the dark at 20 °C until further use Each culture had 4 replicates.

To ensure that the culture was either monokaryotic or dikaryotic, a small sample of fresh mycelium was removed and placed on a microscope slide with a drop of Cotton Blue (0.1%) to check for presence/absence of clamps connections. These clamps connections could be visualized under the microscope (400 x resolution) and used to distinguish monokaryotic from a dikaryotic culture. In this experiment *T. abietinum, F. pinicola, M. taxicola and G. sepiarium* produced clamp connections in the dikaryotic stage.

Both *P. viticola*, and *P. nigrolimitatus* did not make clamp connections at the dikaryotic stage, thus for these two species we could not separate monokaryons from dikaryon visually.

# 2.2.1.2 Dikaryotic fungal culture

In order to produce dikaryotic fungal cultures, three small pieces were removed from inside of the fruit body using a scalpel and placed in a Petri dish of MEA S.T.A.B. The pieces were removed from inside the fruit body to avoid getting any contamination in the fungal cultures. The Petri dish was then sealed with parafilm and placed in a dark incubator with a constant temperature of 20 °C. The mycelium would start to grow after 2-5 days, depending on the species. Once mycelium growth started, the culture was recultivated to limit further contaminations from the source fruit body. To subculture, a small piece of the inoculum was taken with a sterile scalpel and placed onto a new Petri dish containing MEA S.T.A.B, then sealed with parafilm and incubated in the dark at 20 °C until further use. Each culture has 4 replicates.

# 2.2.2 PCR and Sanger sequencing

To confirm species identity, the full internal transcribed space (ITS) sequence was produced. ITS is the universal fungal barcode to identify the species. Using the tip of a sterile pipette, small pieces (< 1 mg) of fresh mycelium from each of the species were removed and placed in a 1.5 mL Eppendorf tube containing 20 µL of the Phire Plant Direct PCR dilution buffer. The tubes were then vortexed and spun down. A master mix containing 2x Phire Plant PCR Buffer (10 µL), ITS4 [5µM] (2 µL), ITS1 [5µM] (2 µL), milliQ $H_2O$ (4,8 µL) and Phire Hot Start II DNA Polymerase (0.2 µL) was prepared and added to 0.5 µL of the dilution mix that contained the mycelium. The samples were then mixed and spun down before they were placed in the PCR machine. The PCR was run on the following program: Initial denaturation at 98°C for 5 minutes, followed by 40 cycles of denaturation at 98°C for 5 seconds, annealing on 54 ℃ for 5 seconds, and extension on 72 ℃ for 20 seconds. At last, a final extension on 72℃ for 1 minute, followed by a hold on 10 ℃.

The PCR samples were cleaned with t ExoProStar 1-Step kit (GE healthcare (VWR)) to remove leftovers of primers and dNTPs by adding 0.2 µl concentrated exoSAP-IT and 1.8 µl milliQ $H_2O$. 2 µL of the 10X ExoProStar 1-step solution was added into new PCR tubes along with 5 µL of the PCR products. Each tube was then closed and ran on the thermocycler at 37ºC for 15 minutes followed by 15 minutes at 80ºC. At last, hold at 10ºC.

The PCR products were sanger sequenced at Eurofins Scientific (Hamburg, Germany).

## 2.3 Common Garden Experiment

### 2.3.1 Growth

In this experiment monokaryotic and dikaryotic hyphal extension rate were measured. To avoid any contamination, this experiment was conducted inside a safety bench with sterile instruments.  A small piece of fresh mycelium of the same size stamped out using the back of a sterile pipette tip of the size 1000 µl was placed in the middle of the Petri dish containing 2% malt extract agar (MEA) and then sealed with parafilm and incubated in the dark with a constant temperature of 20 °C.  Four replicates of each karyotype from each species were set up. The hyphal extension rate differs between species, thus the amount of time needed for the mycelium to grow varies with species. For a given species, both karyotypes were incubated for the same amount of time. Monokaryons and dikaryons of *F. pinicola* were incubated for 8 days, *G. sepiarium* was incubated for 11 days, *M. taxicola* was incubated for 9 days, *P. nigrolimitatus* was incubated for 15 days, *P. viticola* was incubated for 39 days and *T. abietinum* was incubated for 17 days. It was important to ensure that the mycelium did not reach the edge of the Petri dish because the growth rate could decelerate closer to the edge (sensing of obstacle).
Once mycelium growth was visible, the growth of each replicate was measured by measuring the diameter, using a digital caliper and then photographed. These photographs were used to visually estimate any difference in the density and appearance of the mycelium between monokaryons and dikaryons.

## 2.3.2 Decomposition

The same mono- and dikaryon fungal cultures used in the growth experiment were used in the wood decomposition experiment. For this experiment, wood blocks cut out from spruce (*Picea abies*) were used. Each wood block had the size of 20 x 20 x 5 mm. Before setting up the experiment, the wood blocks were numbered, dried, and weighed. The wood blocks were dried at 40 °C for 48 hours. Once dried, each wood block was weighed and marked with a number from 1-300 by a pencil. The wood blocks were then autoclaved 3 times with 24 hours incubation between, at 121 °C for 21 minutes. The decay experiment was set up under sterile conditions. The wood blocks were soaked in autoclaved water for 24 hours before starting the experiment. Once soaked, a single wood block was placed on a piece of nylon sheet onto a Petri dish containing Czapek Dox ÷ Sucrose agar. A sample of fresh mycelium of the same size (stamped out using the back of a sterile pipette tip of the size 1000 µl) was placed on top of the wood block. Four replicates of each karyotype from each species were set up. The Petri dish was then sealed with parafilm and incubated in the dark with a constant temperature of 20 ℃ for 60 days (*F. pinicola, G. sepiarium, M. taxicola, P. viticola and P. nigrolimitatus*) and 90 days (*T. abietinum)*. At the harvest date, each wood block was scraped free of mycelium, dried at 40 °C for 48 hours and weighed again, to calculate the percentage of mass loss.

## 2.4 Statistical analysis

The results from the two common garden experiments were statistically analyzed using R version 3.6.1 (R Core Team (2020). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.). A linear mixed effect model (LME) was used to estimate the effect of species and karyotype on size and decomposition (Pinheiro et al, 2021). I included random effects in the mixed model to make sure that the fixed effect was estimated properly. Because my experiment includes four replicates and two measurements per replicates, I needed to account for this in the random effects structure of the mixed effects model. I used a hierarchical random effect structure with measurement within replicates within species ID, and the random effect was modeled on the intercept.

Four candidate models for the fixed effects of karyotype and species were fitted using maximum likelihood (ML): (Gmod1) a model including species and karyotype, with an interaction between species and karyotype, (Gmod2) a model including species and karyotype without any interactions, (Gmod3) a model including only species, and (Gmod4) a model including only karyotype. The final model that best explained the data (based on the lowest AIC) was refitted using restricted maximum likelihood (REML). The AIC estimates and compares different possible models to the other models and determine which of the models best fits the data. The fixed effects of the selected model were tested further using a variance analysis (ANOVA) and Tukey's test to reveal whether significant differences in growth could be found between monokaryons and dikaryons. I used the emmeans package (Russell V. Lenth (2022). emmeans: Estimated Marginal Means, aka Least-Squares Means. R package version 1.7.5. https://CRAN.R-project.org/package=emmeans) to extract and plot the marginal means of type for each species with 95% confidence interval, in order to investigate pairwise comparisons of monokaryons and dikaryons within each species.

The correlation between decay and growth was also tested. I made a merged dataset of both growth and decomposition datasets where I calculated the mean across measurements and replicates. I tested the correlation further by using a simple linear model.

# 3 Results

## 3.1 Growth

The growth experiments were evaluated by the size of the mycelia at the harvesting time. The dikaryons had grown slightly larger than monokaryons for the species *F. pinicola, M. taxicola, P. viticola,* and *P. nigrolimitatus* (Fig 2). The variation in the size of the mycelia within karyotype was higher in monokaryons. For the species *T. abietinum* the size of mycelia was almost equal in both monokaryons and dikaryons, but the variation in the size of the mycelia was much higher for dikaryons. For the species *G. sepiarium* it was the opposite, as monokaryons had grown slightly larger than dikaryons, and the variation in the size of the mycelia were higher in dikaryons. Overall, the size of mycelia was higher for dikaryons in every species except *G. sepiarium* and *T. abietinum* (Fig 2).

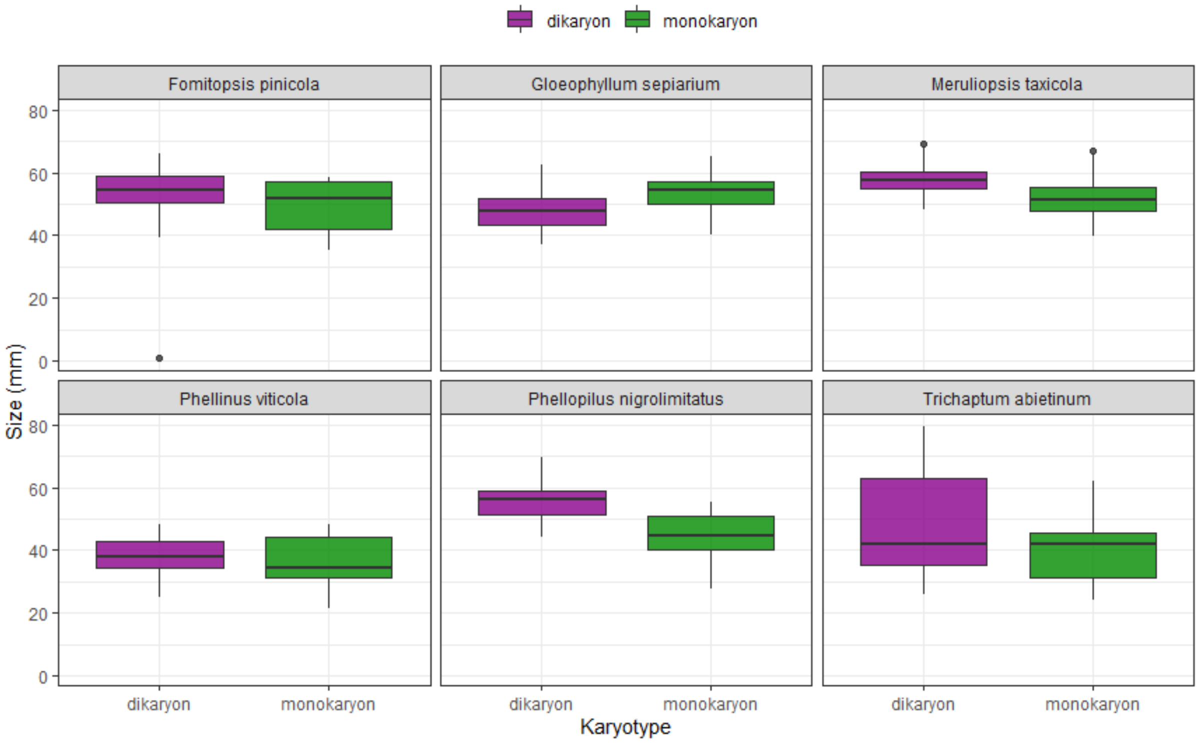


Figure 2: Boxplots summarizing the size difference of the monokaryotic and dikaryotic mycelia of *F. pinicola, G. sepiarium, M. taxicola, P. viticola, P. nigrolimitatus* and *T. abietinum* at 20 °C for 60 and 90 days. The color of the boxes and the x-axis represent the karyotype. The y-axis describes the size at harvest date measured in mm. The horizontal line in each box represents the median, and the top and bottom line of each box describes the 25$^{th}$ and 75$^{th}$ percentiles. The vertical lines extending from the boxes describes the minimum and maximum values and the dots represents outliners.

Various models for fixed effect based on combinations of karyotype and species were tested to find the best model explaining the data based on the lowest AIC score. The Gmod2 model had the lowest AIC among the tested fixed effect models based on combination of karyotype and species. Gmod3 model had the lowest BIC, but higher AIC then Gmod2 (Table 2) Thus, Gmod2 seemed to be the best model with predictive power overall, but Gmod 3 is almost as good as Gmod 2. There was little support for Gmod4 as this model has a higher AIC value compared to the other models (Table 2).

Table 2: table illustrating different models for fixed effects (different combinations of species and karyotype). Gmod1 includes species and karyotype, and the interaction between species and karyotype. Gmod2 includes species and karyotype without interactions. Gmod3 includes only species, and Gmod4 includes only karyotype.

The AIC compares different models against each other to determine which models fit the data best. BIC is a method for scoring and selecting models.

| | df | AIC | BIC |
|---|---|---|---|
| Gmod1 | 16 | 3341.369 | 3411.288 |
| Gmod2 | 11 | 3337.450 | 3358.519 |
| Gmod3 | 10 | 3340.318 | 3384.017 |
| Gmod4 | 6 | 3361.956 | 3388.175 |

Table 3: table showing the estimated effects from the selected mixed model Gmod2 fitted with REML. The effects are all compared to an arbitrary reference species/karyotype, which in this case is *Fomitopsis pinicola*, karyotype dikaryon.

| | Value | Std.Error | DF | t-value | p-value |
|---|---|---|---|---|---|
| (Intercept) | 53.72567 | 2.223418 | 292 | 24.163549 | 0.0000 |
| ***Gloeophyllum sepiarium*** | -2.53488 | 3.213841 | 66 | -0.788738 | 0.4331 |
| ***Meruliopsis taxicola*** | 3.36202 | 2.928869 | 66 | 1.147892 | 0.2552 |
| ***Phellinus viticola*** | -14.64088 | 3.139635 | 66 | - 4.663244 | 0.0000 |
| ***Phellopilus nigrolimitatus*** | 0.35396 | 3.524177 | 66 | 0.100438 | 0.9203 |
| ***Trichaptum abietinum*** | -6.80258 | 3.161315 | 66 | -2.151820 | 0.0351 |
| Karyotypemonokaryon | -4.45792 | 1.998936 | 66 | -2.230148 | 0.0291 |

When comparing the effect species and karyotype had on size based on the selected model (Gmod2), it can be seen that most of the variation in growth between monokaryons and dikaryons could be explained by species (p-value 0.000), but that karyotype also had a significant effect (p-value 0.03) (Table 4).

Table 4: ANOVA table, showing the estimated effects from Gmod 2. P-value was calculated using ANOVA.

| | numDF | denDF | F-value | p-value |
|---|---|---|---|---|
| (Intercept) | 1 | 292 | 534.293 | 0.000 |
| Species | 5 | 66 | 7.977 | 0.000 |
| Karyotype | 1 | 66 | 4.551 | 0.037 |

Without any overlapping arrows (Fig 3), the difference in growth is significant according to the Tukey’s post hoc test. Overall, monokaryons grew to a smaller size than dikaryons and there was high variance in size in each karyotype (Fig 3).

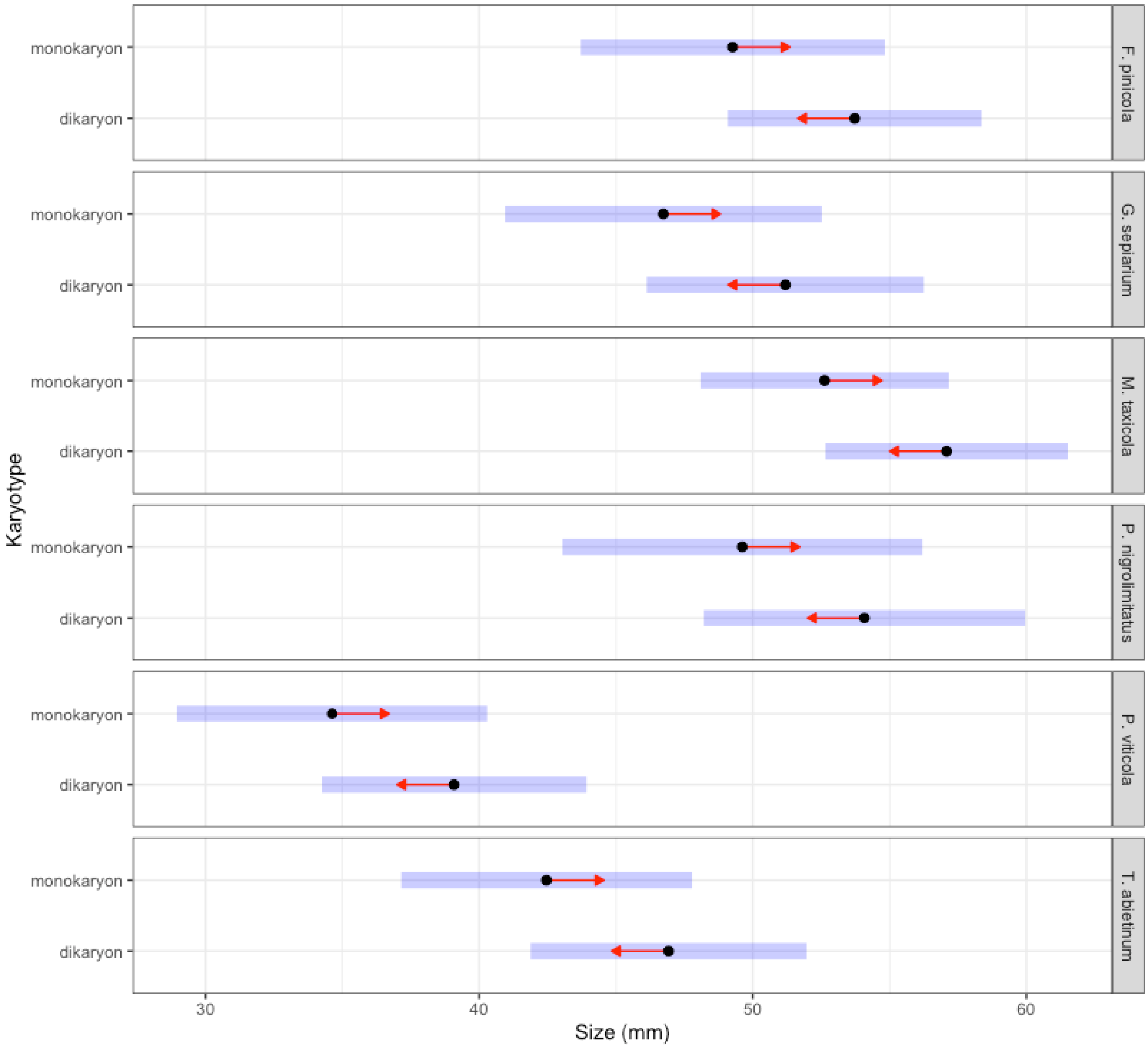


Figure 3: marginal means plot illustrating the species-specific difference between monokaryons and dikaryons from the fitted model Gmod2. The blue bars represent 95% confidence intervals, and the red arrows represent the pairwise comparison according to the Tukey post hoc test.

## 3.1.1 Mycelium density

Photographs was taken of each culture at the harvest date to see if it was possible to visually separate a monokaryon from a dikaryon.

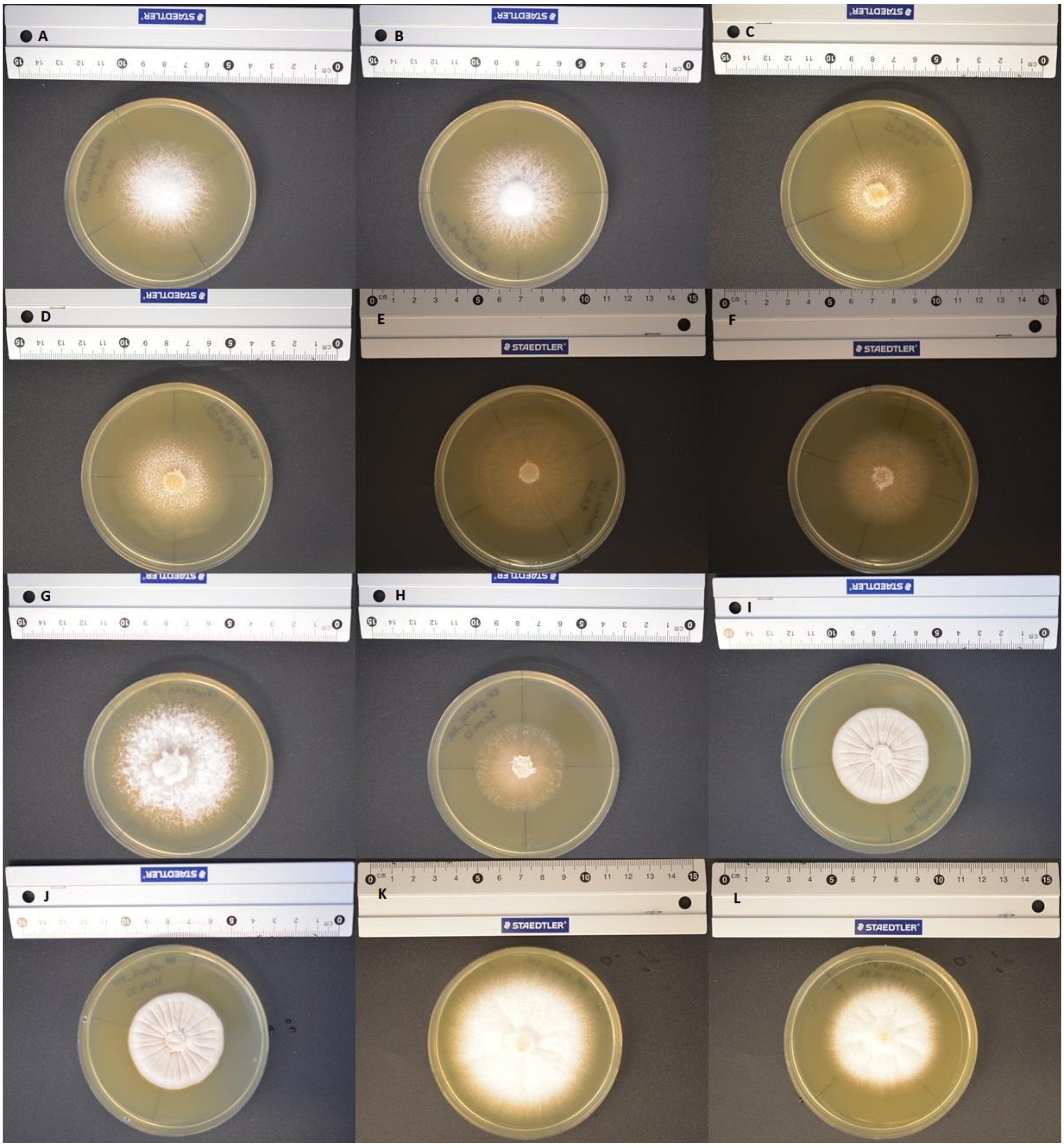


Figure 4: photographs of a dikaryon and a monokaryon from each species. a) dikaryon of *F. pinicola*, b) monokaryon of *F. pinicola*, c) dikaryon of *G. sepiarium*, d) monokaryon of *G. sepiarium*, e) dikaryon of *M. taxicola*, f) monokaryon of *M. taxicola*, g) dikaryon of *P. nigrolimitatus*, h) monokaryon of *P. nigrolimitatus*, *i*) dikaryon of *P. viticola*, j) monokaryon of *P. viticola*, k) dikaryon of *T. abietinum*, and l) monokaryon of *T. abietinum*. Each monokaryon and dikaryon is from the same replicates within each species.

In species *F. pinicola* (A, B) the mycelium was identical in both mycelium density and colors. The same goes for species *G. sepiarium* (C, D). *Meruliopsis taxicola* (E, F) showed a slight difference in mycelium density where the monokaryotic mycelia seemed fluffier than the dikaryotic one, but the color of the mycelium was the same. For the species *P. nigrolimitatus* (G, H), there was a clear difference in the mycelium density and color between the dikaryon and monokaryon. Here, the dikaryon had a fluffier and whiter mycelium than monokaryons. *Phellinus viticola* (I, J) was identical in both density and color and *T. abietinum* (K, L) were nearly identical in density, and both mycelia were of the same color (Fig. 4). Figure 4 shows only one replicate of one individual of each species. For most of the species, there were no distinct difference in the density or the appearance of the mycelium between monokaryons and dikaryons (Figure 9-14, appendix).

## 3.2 Decay

For the decay experiments of *F. pinicola, M. taxicola and T. abietinum* the wood blocks had lost mass at the harvesting point (Fig. 5). Both monokaryons and dikaryons of these three species showed nearly identical mean decomposition rate. For the species *F. pinicola,* dikaryons had a higher variance of mass loss, while monokaryons in species *M. taxicola* and *T. abietinum* showed a slightly higher variance of mass loss
The three species *G. sepiarium, P. viticola* and *P. nigrolimitatus* yielded negative results, with a few exceptions. The few wood blocks that showed mass loss in species *G. sepiarium* and *P. viticola* were decayed by dikaryons, while wood blocks with mass loss decayed by *P. nigrolimitatus* were decayed by both monokaryons and dikaryons (Fig. 5)

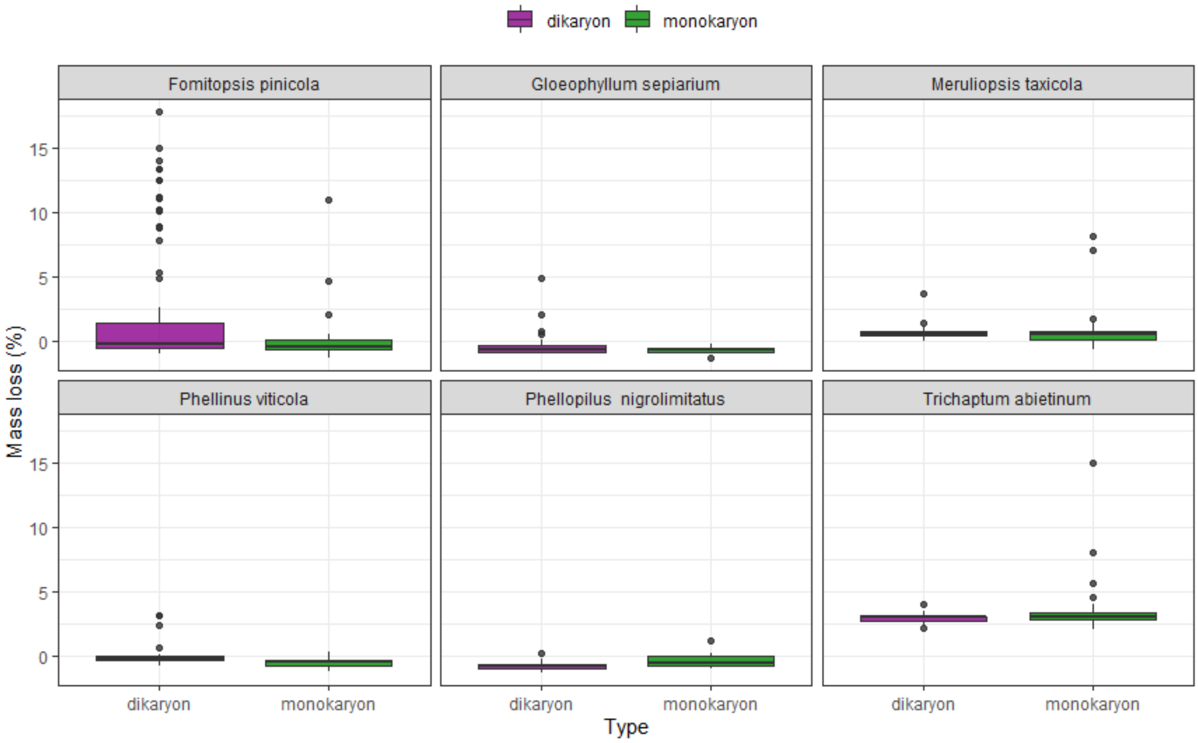


Figure 5: boxplot summarizing the decomposition ability of monokaryotic and dikaryotic cultures based on mass loss on spruce wood blocks (measured in percentage) after 60-90 days for the species *F. pinicola, G. sepiarium, M. taxicola, P. viticola, P. nigrolimitatus* and *T. abietinum* at 20 °C. The color of the boxes and the x-axis represents the karyotype. The y-axis describes mass loss in percentage. The horizontal line inside the boxes shows the median while the top and bottom line of each box describes the 25th and 75th percentiles. The dots represent outliners.

Various models for fixed effect based on combinations of karyotype and species were tested to find the best model explaining the data. Gmod1 and Gmod4 held little support because AIC was higher than the other two models. Both Gmod2 and Gmod3 had similar AIC values, but the best predictive models based on the lowest AIC and BIC number was Gmod3, which includes only species (Table 5).

Table 5: Table illustrating different models for fixed effects (different combinations of species and karyotype). Gmod1 includes species and karyotype, and the interaction between species and karyotype. Gmod2 includes species and karyotype without interactions. Gmod3 includes only species, and Gmod4 includes only karyotype.

| | **dF** | **AIC** | **BIC** |
|---|---|---|---|
| Gmod1 | 15 | 1513.645 | 1570.772 |
| Gmod2 | 10 | 1508.297 | 1546.348 |
| Gmod3 | 9 | 1506.444 | 1540.690 |
| Gmod4 | 5 | 1546.267 | 1565.292 |

There was little to no correlation between the size of mycelia and decay ability. In *F. pinicola* there might be a slight trend, but no conclusion could be drawn due to the few monokaryons included in the experiment (Fig. 6).

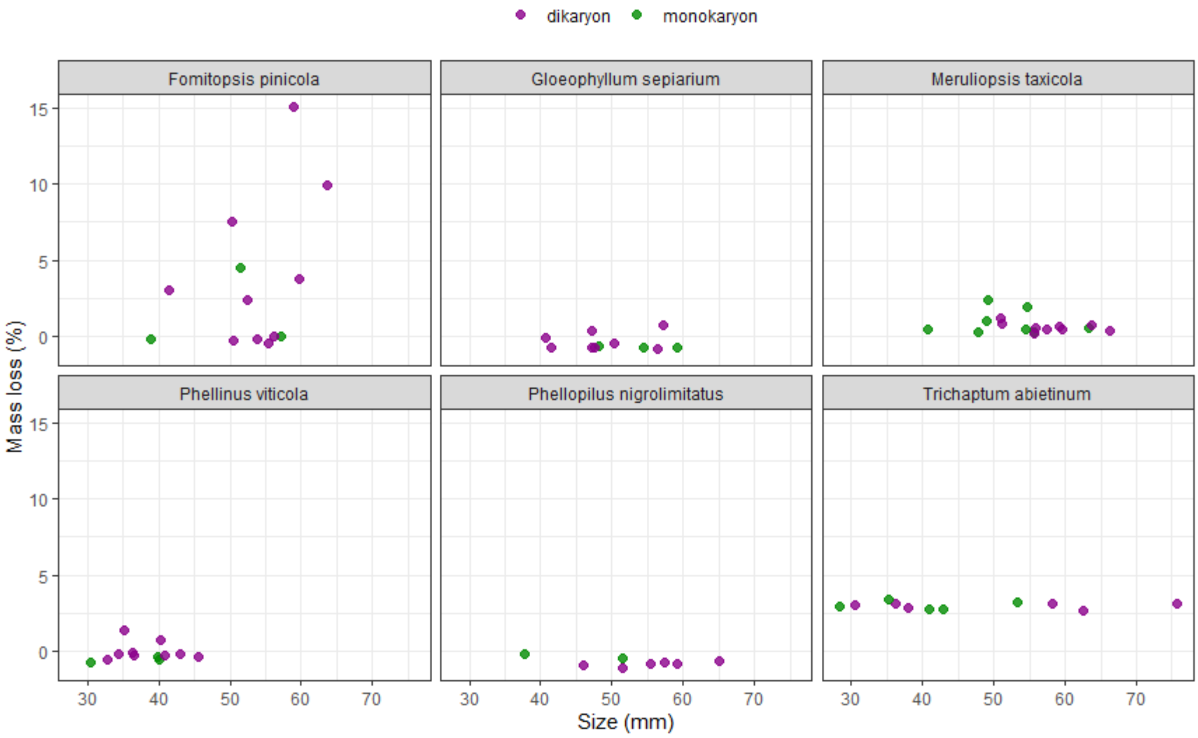


Figure 6: Plot of mean growth rate (hyphal extension rate) and mean weight loss (decomposition rate). The colored dots represent the karyotype. The y-axis represents the mean decomposition rate shown as mass loss (%). The x-axis shows the mean growth difference measured in mm.

There was no effect of mass loss on the mycelial size when analyzed using a simple linear model based on the Adjusted R-squared value as this value was close to 0 (Table 6).

Table 6: ANOVA table, showing the estimated effects. P-value was calculated using ANOVA.

| | **Estimate** | **Std. Error** | **t value** | **p-value** | **Adjusted R-squared** |
|---|---|---|---|---|---|
| (Intercept) | -0.60540 | 1.54316 | -0.392 | 0.696 | |
| Mean.growth | 0.03455 | 0.03063 | 1.128 | 0.263 | 0.003822 |

# 4 Discussion

The result from the growth experiment showed a that dikaryons formed larger mycelia, but that it differs between species. For the decay experiment, there were no clear trend as the mean mass loss of the wood blocks were the same in each karyotype, but mass loss of the wood blocks differed between species and some of the species had very little to no decomposition. Further analysis showed that species had an effect on the results. No correlation between extension rate and decomposition rate was found.

**Difference in mycelia formation of monokaryons and dikaryons**

The results from the growth experiment showed a high variability in mycelial size for both monokaryons and dikaryons, however, the dikaryon formed more often a more extensive mycelium than monokaryons. No visible difference in mycelia density and appearance were observed. These results may reject the hypothesis that monokaryotic mycelium grow faster than dikaryons with a less dense mycelia, though the differences were small. The results from the fixed effect models (Table 2, 3, 4) revealed that both species and karyotype, without interactions, both had an impact on mycelial size. That can lead to the conclusion that the effect of karyotype alone does not affect size difference between monokaryons and dikaryons, and that species also play a role in the difference in size between the different karyotic stages.

Several studies have been conducted on the difference in growth rate between monokaryons and dikaryons in different species. Studies conducted by Bezemer (1973), and Hansen (1979) showed similar results in that dikaryons of species *Gloeophyllum trabeum* and *Phellinus weirii* grew faster than monokaryons. This is coherent with *F. pinicola*, *P. viticola* and *P. nigrolimitatus* in the present study. Similar to *G. sepiarium,* Crockatt et al. (2008) found that monokaryons of *Hericium coralloides* had a faster extension rate then dikaryons, but that the differences were only significant at a temperature of 15 °C. Fryar et al. (2002) also found that monokaryons of a *Peniophora* species had a faster extension rate than dikaryons, but only one isolate of each karyotype was tested. Based on all these studies, including my own, there seem to be no apparent trend for monokaryons and dikaryons to grow faster or slower than one another.

In the present study all individuals where incubated at 20 °C. Would the result have been different if the individuals had been incubated at different temperature? As Crockatt et al.

(2008) only found significant differences in extension rate at 15 °C and their result differed from my result can lead to the assumption that different environmental factors could have an impact in growth rate between monokaryons and dikaryons. For further studies on how and if, different environmental conditions can affect growth rate between karyotype, I would therefor suggest incubating individuals at several different temperatures.

**Difference in decay ability of monokaryons and dikaryons**

The results from the decay experiment showed that the mean decay ability is nearly identical for the species in which the wood blocks had experienced mass loss at the harvest point. The species *T. abietinum* showed a slightly higher decomposition rate than both *M. taxicola* and *F. pinicola.* For *G. sepiarium, P. nigrolimitatus* and *P. viticola* no mass loss had occurred. These results could possibly reject the hypothesis that the dikaryotic mycelia would decompose spruce wood blocks faster than monokaryons. The results from the fixed effect models (Table 5) showed that species had, together with karyotype, a high effect on the decomposition rate. This can lead to the conclusion that the effect of species on the result is high. Several studies have also been conducted on the topic on the difference of decomposition rate between monokaryons and dikaryons in different species. For example, Amburgey (1970) found that dikaryons of *Lenzites trabea* had a higher decomposition capacity than monokaryons. The opposite could be seen in *Serpula lacrymans,* according to Elliot et al. (1979). For the species *Schizophyllum commune*, the decomposition rate in monokaryons could be both greater and lower than in the dikaryons (Simchen 1966). Based on all of these studies, including my own, there seem to be no clear trend in the difference in decomposition rate.

Most of the results from the different studies mentioned above showed that decomposition rate between each karyotype differs between species, which is also true for my experiment. Factors that are known to alter the composition and diversity of wood-decaying fungi include density, size, pH, moisture, and content of nutrients. Rajala et al. (2012) conducted a study on fungal community structure in relation to substrate quality of decaying spruce. They found a link between community structure and the stage of decay and wood density. They proposed that the fungal diversity increased during the decomposition stage and can be explained by reasons such as (1) recently deceased spruce is a harsh environment for many fungi because of the low moisture and (2) the middle stage of decomposition may limit diversity because of the high competition of saprotrophs. They found that species of ascomycetes were common in the early stages of wood decomposition, and that species belonging to white- and brown-rot fungi became more abundant during the intermediate stage of decomposition, to an abundance of ECM in nearly fully decayed wood (Rajala et al 2012). This study is relatively comparable to my study. All specimens were collected from spruce. The result from the decomposition experiment could be explained by the condition of the wood block. If the conditions were too rough, it could be expected that the decomposition rate would be slow at start and then increase with the decomposition of the wood block and that with time, the decomposition rate would be higher. For further studies I would suggest that the decomposition experiment is set up for a longer time than in the present study and with more replicates to measure decomposition rate several times during the experiment. This could possibly tell us whether the decomposition rate increases, stays the same or decrease with time.

Is it possible that monokaryons and dikaryons are affected differently by succession or other environmental factors? In nature, both monokaryons and dikaryons are exposed to the very similar stresses during the colonization of a woody resource and the utilization of it (Hiscox et al. 2010). For all basidiomycetes becoming a dikaryon is necessary to complete the life cycle (Stenlid et al. 2008) and one can assume that each stage is not equal when it comes to functions and importance, but each stage is important on its own, so it is hard to determine the benefits of being a monokaryon versus a dikaryon. Most basidiomycetes spread by spores, in which some lands on a woody substrate and germinates and produces mycelium. This stage is important in the colonization of the resource. If this resource is not inhabited by other species, it could be possible that the monokaryons might have a slower growth rate because there are no one to compete with. Under stressful conditions, the monokaryons could experience a higher growth rate to be able to outcompete other species for space and a higher decomposition rate to obtain as much nutrients it can to survive and become a dikaryon. It can therefore be assumed that monokaryons and dikaryons will perform differently under different conditions. Dikaryons have to balance the growth rate according to its environment. Dikaryons who has a high extension rate has the potential to produce more fruit bodies, but if it grows to fast it stands the risk of depleting its food resource and not completing its life cycle. I would expect that the growth rate is mirrored by the surrounding environmental conditions as well as the type of wood it grows on and the presence of other species. It is hard to determine the fitness for monokaryons and dikaryons. It can be assumed that monokaryons and dikaryons have a joint fitness, but that each stage has different demands. Monokaryons may be an important stage in the early colonization, but they need to become dikaryon in order to complete its life cycle. So, what could possibly explain the presence of many monokaryons? Several reasons for this could be new germinations, de-dikaryotization, which could be brought on by stressful conditions, recent fruiting and clamp connections that are not present in all types of hyphae. Garbaletto et al (1997) found that monokaryons of the species *Heterobasidion annosum* had not become dikaryons after 12 months and that they showed the same level of virulence as dikaryons. They explained that it could be due to high primary infections of single spores or events of de-dikaryotization (Garbaletto et al. 1997).

What could explain the difference in decay ability between species? In the present study, five out of six species belong to white-rot fungi, and one belong to brown-rot fungi. White and brown rot fungi have similar strategies for the colonization and the penetration of lignocellulosic materials of a wood resource, but they have different strategies when it comes to the degradation of lignocellulosic cell walls (Singh and Singh 2016). Brown rot and white rot species have different enzymatic potential based on the genes they have decay (Watkinson and Eastwood 2012). A comparative analysis of the genomes of brown rot species *S. lacrymans* and *P. Placenta* show that they have fewer lignocellulose-decay genes than species of white rot fungi and they do not have the lignin oxidation mechanisms characteristics as white rot decay (Watkinson and Eastwood 2012). Brown rot fungi tend to have a more rapid decay than white rot species (Xu et al. 2021). This was not the case in the present study. The wood blocks of the brown rot species *Gloeophyllum sepiarium* had little to no mass loss compared to the wood blocks of the white rot species *Fomitopsis pinicola*, *Meruliopsis taxicola* and *Trichaptum abietinum.* It is possible that *G. sepiarium* needed more time to get the decomposition started, or the chemical composition of the wood blocks were not similar to the wood in natural conditions Another possibility could be that *G. sepiarium* has a higher decay ability in stressful condition such as the presence of competition of other decay species. No conclusion can be made. I would recommend, for further studies on this topic, to extend the time during the decomposition experiment, with different types of wood and with an introduction of competition and different environmental conditions with measurements of the different enzymes used in the decomposition process of wood.

There have been studies about the relationship between wood quality and decomposition rate. A study conducted by Venugopal et al. (2015) showed a connection between decomposition

rate and wood quality for several species and found that the overall decomposition rate varied between the species and wood type. In the present study all six species were collected from spruce (*P. abies*) and they were also set up to decompose spruce wood blocks. It could be a possibility that the difference in decomposition rate between species could be due to the quality of the wood blocks. In the present study, a high number of wood blocks had very little to no mass loss, especially for species *G. sepiarium, P. nigrolimitatus* and *P. viticola.*
The wood blocks in the present study were bought from a wood shop, and even though they were not supposed to be treated with anything, there is no way of knowing if they were in fact untreated. Therefore, it can possibly be argued that the lack of mass loss on many wood blocks could be because of low quality of the wood and that different species have higher or lower tolerance to the quality of the wood.

The present study was conducted in vitro. All species were exposed to the same environment. They grew on the same medium, they decayed the same type of wood, and they were exposed to the same constant temperature. These are not the same conditions we expect to find in nature. There is often a strong correlation between in vitro studies on basidiomycetes and the observation made in the field. For example, a study investigating the competitive ability of two fungal species showed that in agar cultures, the species *Hypholoma fasiculare* replaced *Steccherium fimbriatum,* but when the two mycelia met under natural conditions, it resulted in deadlock, and even the replacement of *H. fasiculare* by *S. fimbriatum* (Boddy 2000). I would expect that results from the present study would differ if these results came from field observation. The decomposition and growth processes are influenced by the species itself and by the influence of abiotic factors such as light, pH, temperature, humidity, the availability of water and type of wood and competition. Different species have different growth rates, different decomposition rate of different types of wood and the variations in growth and decomposition rate are linked to a species metabolic rate and its ecological strategy (Boddy 2001, Venugopal et al 2015).

Could there be a correlation between mycelia density, and growth- and decomposition rate. In the present study, no visible difference in density and appearances of the mycelia between monokaryons and dikaryons during the growth experiment could be seen. Initially, the mycelia from monokaryons and dikaryon was to be weighed in order to calculate density, but because the pore size of the nylon sheet was too big, the mycelium grew through it and into the agar and the results would have been inaccurate. Because of this, photographs of the mycelium were used to visually measure the mycelium. In regard to decomposition rate and mycelia density, a trend was seen during the decomposition experiment in which the individuals that had the highest decomposition rate had produced more mycelium than species who had low to no decomposition. In an experiment conducted by Lustenhouwer et al (2020), a negative correlation between mycelium density and decomposition was seen. Based on the results from the present study, it is possible that the hypothesis could be true, in which mycelial density and decomposition rate is correlated. Without any exact weight measurement of the mycelium, it cannot be concluded that the density of the mycelium could be correlated with either growth or decomposition rate.

Another possible observation is that there is a difference in the density of mycelium between monokaryons and dikaryons. For monokaryons of the species *Coprinus cinerius*, the hyphae are usually thin and with a diameter of about 3 µm. For *C. cinerius*, dikaryons tend to grow faster than monokaryons, and their mycelium is much denser, in which the hyphae are about 7 µm in diameter (Kües 2000). An advantage of a denser mycelium is that a wider hyphal network could imply a more efficient uptake of nutrients. More nutrients could lead to more growth, which in turn increases the fitness of dikaryons (Serghi et al. 2021). In the present study, there were as much difference in mycelium density between monokaryons and dikaryons as within each karyotype. Without any form of digital analysis of the photographs of the mycelium, it is not possible to conclude that there is any difference in mycelial density between monokaryons and dikaryons, and that it can explain the difference in growth and decay ability between the karyotypes.

**Correlation between growth and decomposition**

I also tested to see if there could be a correlation between the growth rate and decomposition rate. Based on the simple linear model, there were no effect of weight loss on the growth rate. Lustenhouwer et al. (2020) discovered a positive correlation between extension rate and decomposition rate. For the species *Chondrostereum purpureum*, Henningson (1965) found that a fast extension rate can be related to a slow decomposition and that slow extension rate can be associated with a high decomposition rate in species *Ganoderma adspersum.* On the other hand, fast extension rate was associated with high decomposition rate, which was true for the species *Coriolus versicolor (*Boddy et al. 1989). In all these experiments, both decomposition and extension rate varied between the different strains and between monokaryons and dikaryons.

# Conclusion

Overall, dikaryons grew to a bigger size than monokaryons, and monokaryons and dikaryons showed nearly identical decomposition rate for the species in which the wood blocks had mass loss at the harvest point.

Under the same optimal conditions, monokaryons and dikaryons performed differently in the growth experiment, while they performed equally in the decomposition experiment. As these optimal conditions are rare in nature it is to be expected that both karyotypes will perform differently when exposed to different stressful environmental conditions. All the studies conducted on the difference in growth rate and decomposition rate between monokaryons and dikaryons show no trend as there is as much difference between karyotypes as between different species. And it is important to remember that all these studies have been conducted under different sets of conditions. From the result in the present study, dikaryons performed “better” than monokaryons in the growth experiment. I will, however, not conclude that one karyotype is better than another because the parameters around both experiments do not mirror the environments found in the field. But I do think that this study is a starting point in the further studies of the fitness in both monokaryons and dikaryons and I recommend that both experiments is set up in environments similar to those found in the field. In example, incubate at different temperatures, introduce competition in some of the cultures, different availability of water and perhaps different conditions of the and extending the time for the decomposition experiment.

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# Appendix

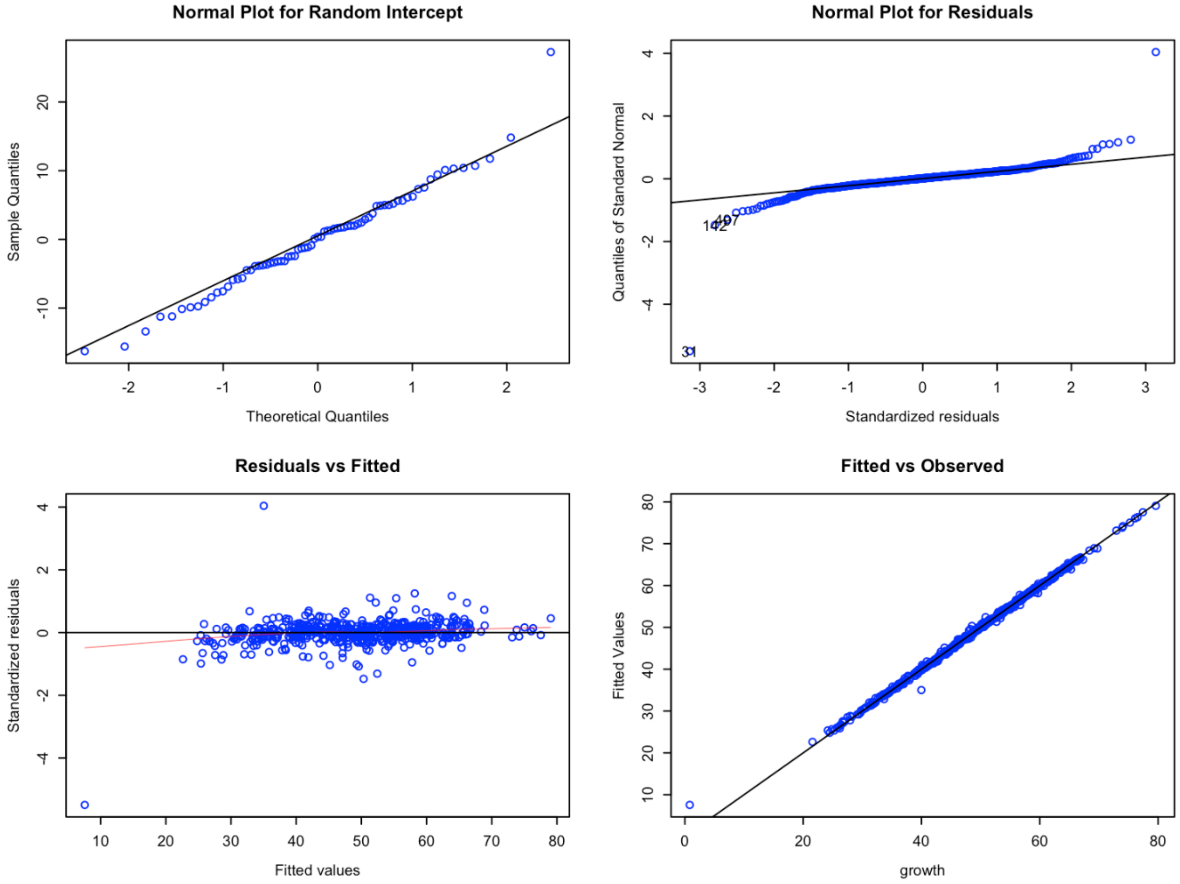


Figure 7: Diagnostic plot for the selected model Gmod2, fitted with GmodREMl. The residuals look fine, and they do not show any violations of the model assumption.

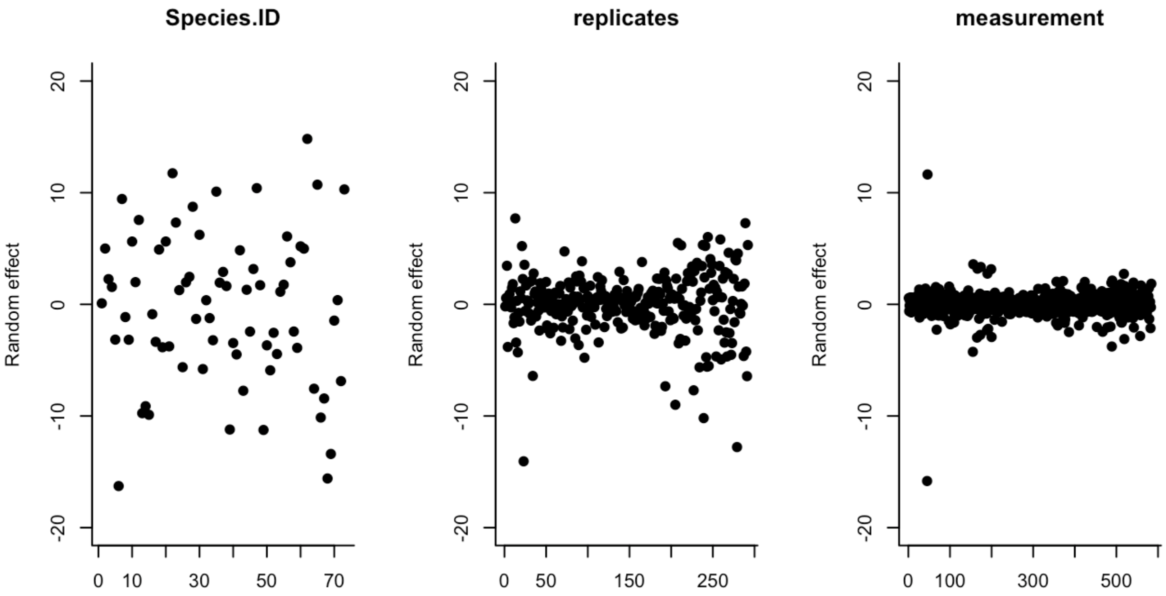


Figure 8: Plot illustrating the random effects from the selected model Gmod2, fitted with GmodREML. The random effects show variation in species ID, replicates within species ID and measurement within replicates. The three random effects are plotted on the same scale for comparison. The highest variance was found within species ID, followed by replicates and then measurement.

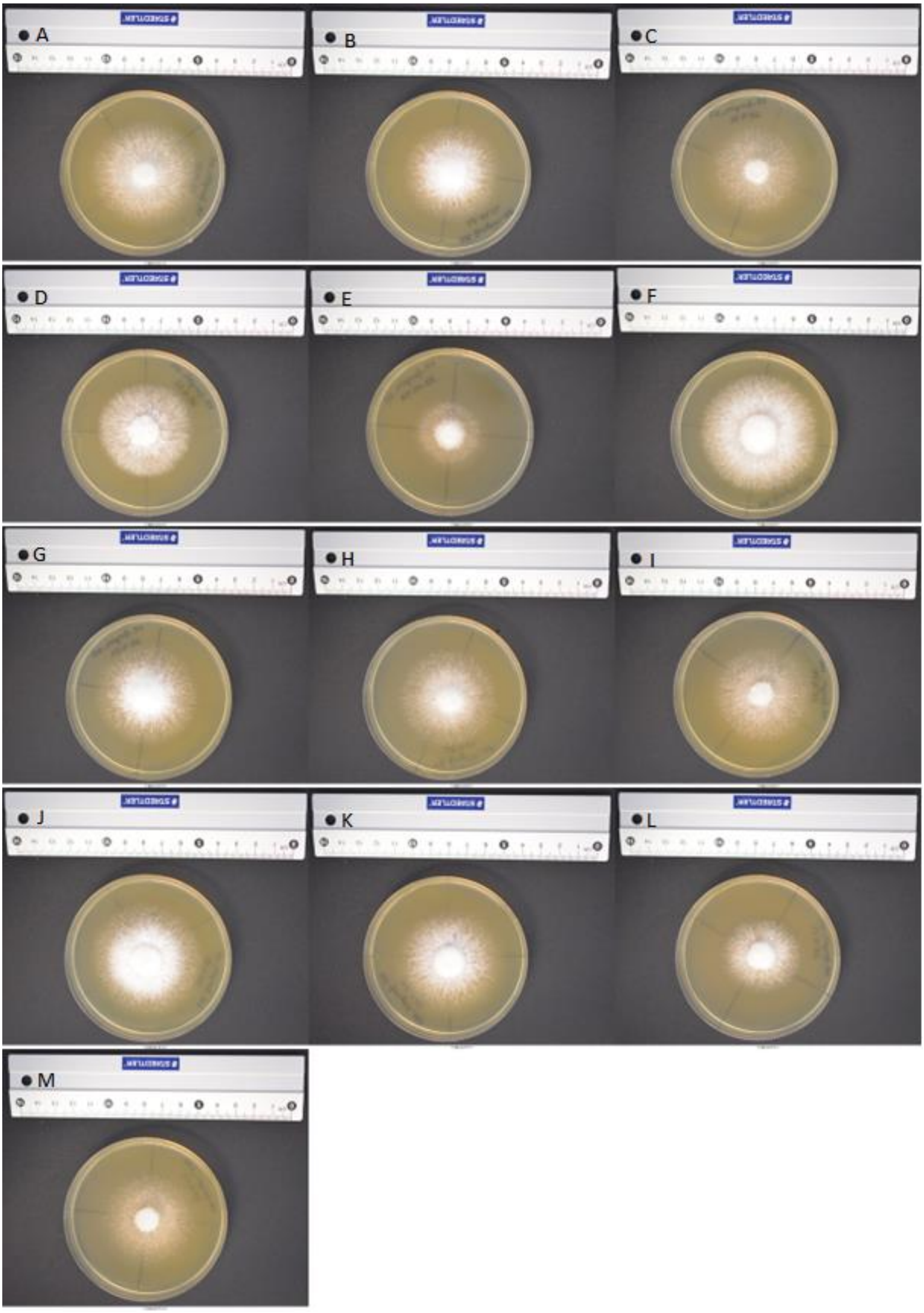
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Figure 9: Photographs of monokaryotic and dikaryotic mycelia from *Fomitopsis pinicola.* Photographs A-J shows dikaryons. K-M shows monokaryons. Both monokaryons and dikaryons show variance in both density and size.

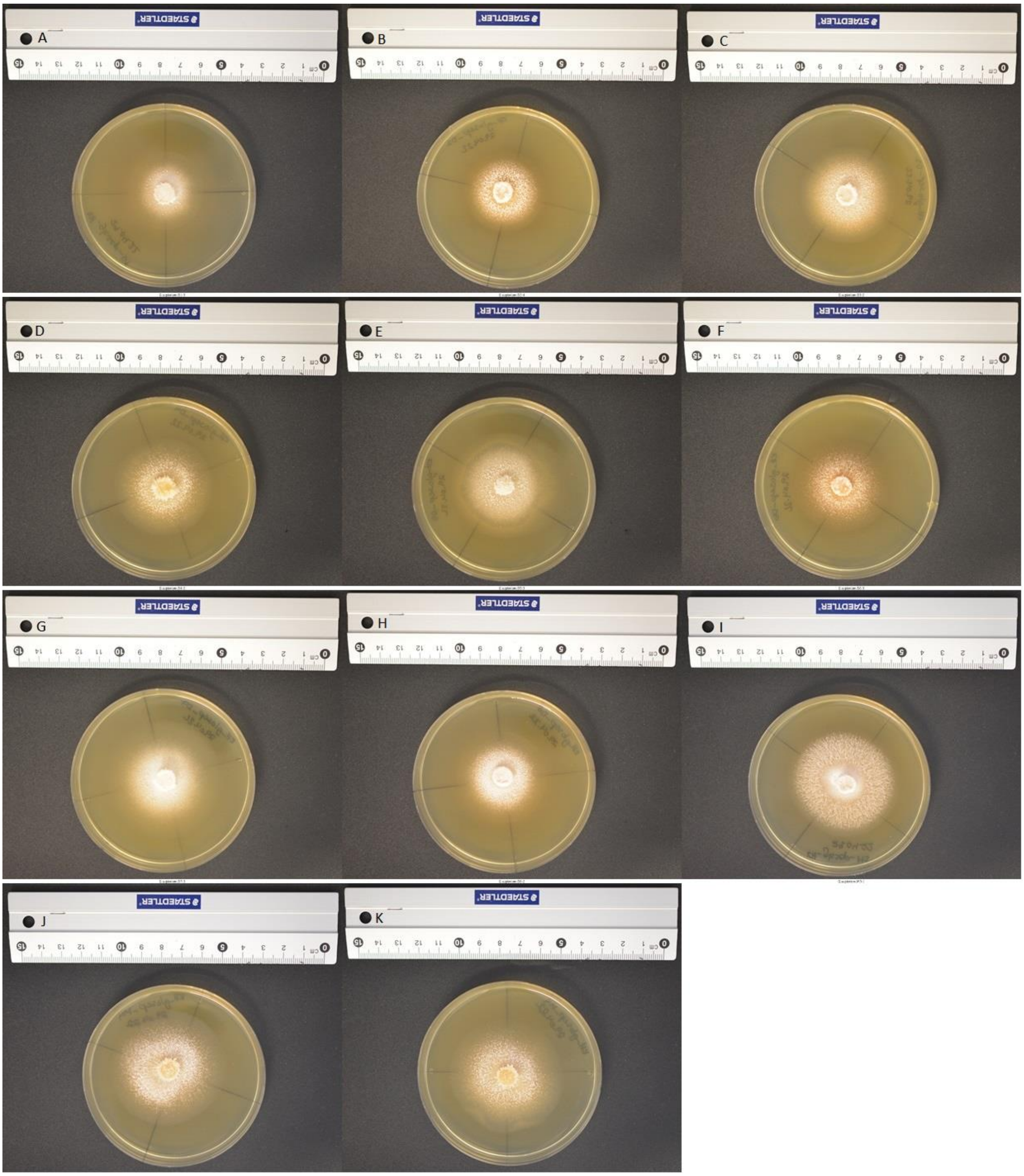

Figure 10: Photographs of monokaryotic and dikaryotic mycelia from *Gloeophyllum sepiarium.* Photographs A-H shows dikaryons. I-K shows monokaryons. There is difference in density and size between monokaryons and dikaryons.

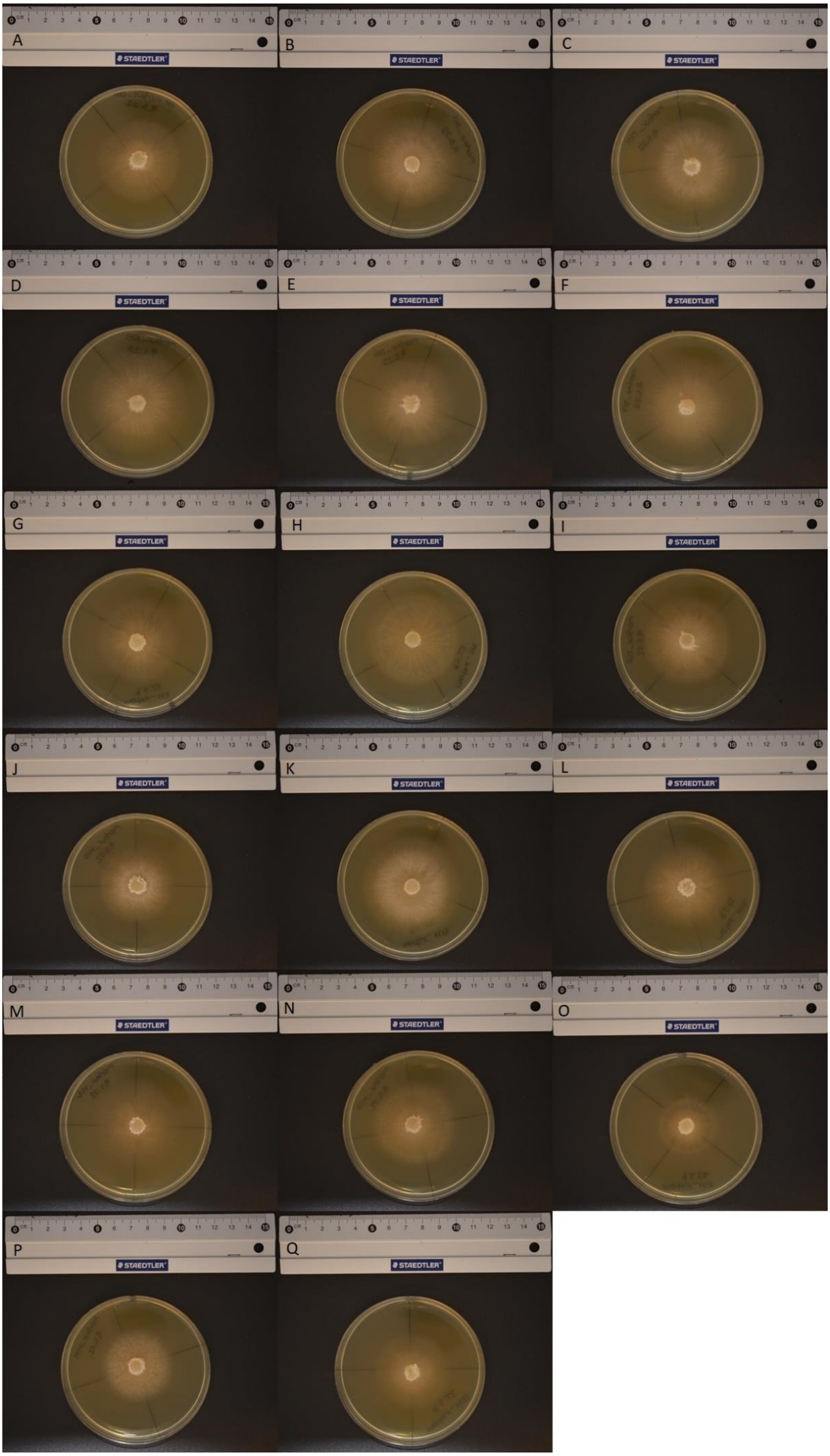
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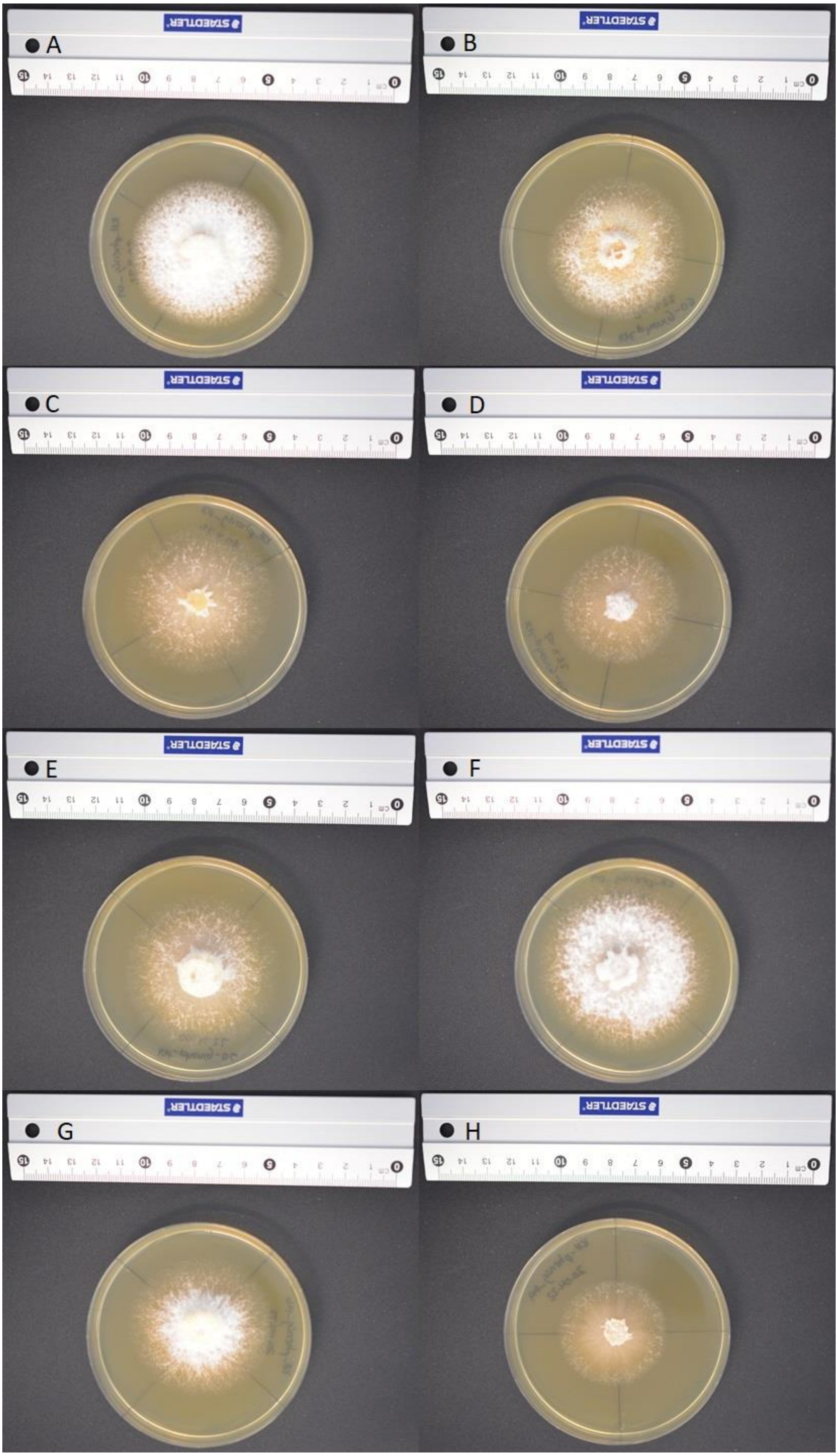
Figure 11: Photographs of monokaryons and dikaryons of species *Meruliopsis taxicola.* A-I shows dikaryons and J-Q shows monokaryons.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D
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F
G
H

Figure 12: Photographs of monokaryons and dikaryons from *Phellopilus nigrolimitatus.* Photographs A-F shows dikaryons. G and H shows dikaryons. Both monokaryons and dikaryons show difference in density and color.

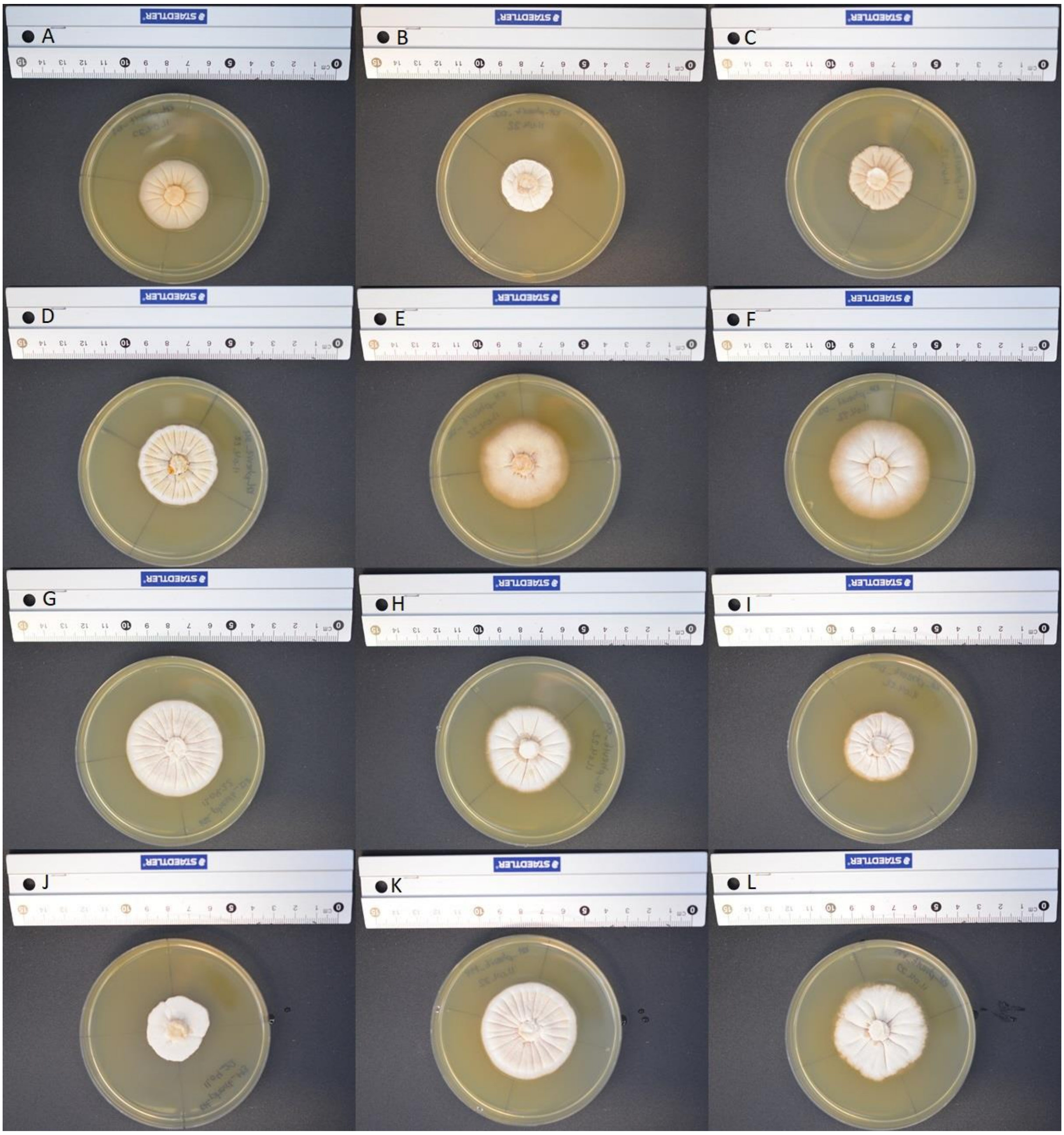


Figure 13: Photographs of monokaryons and dikaryons from *Phellinus viticola.* Photographs A-I shows dikaryons and J-L shows monokaryons. There are differences in both density and color between the karyotypes.

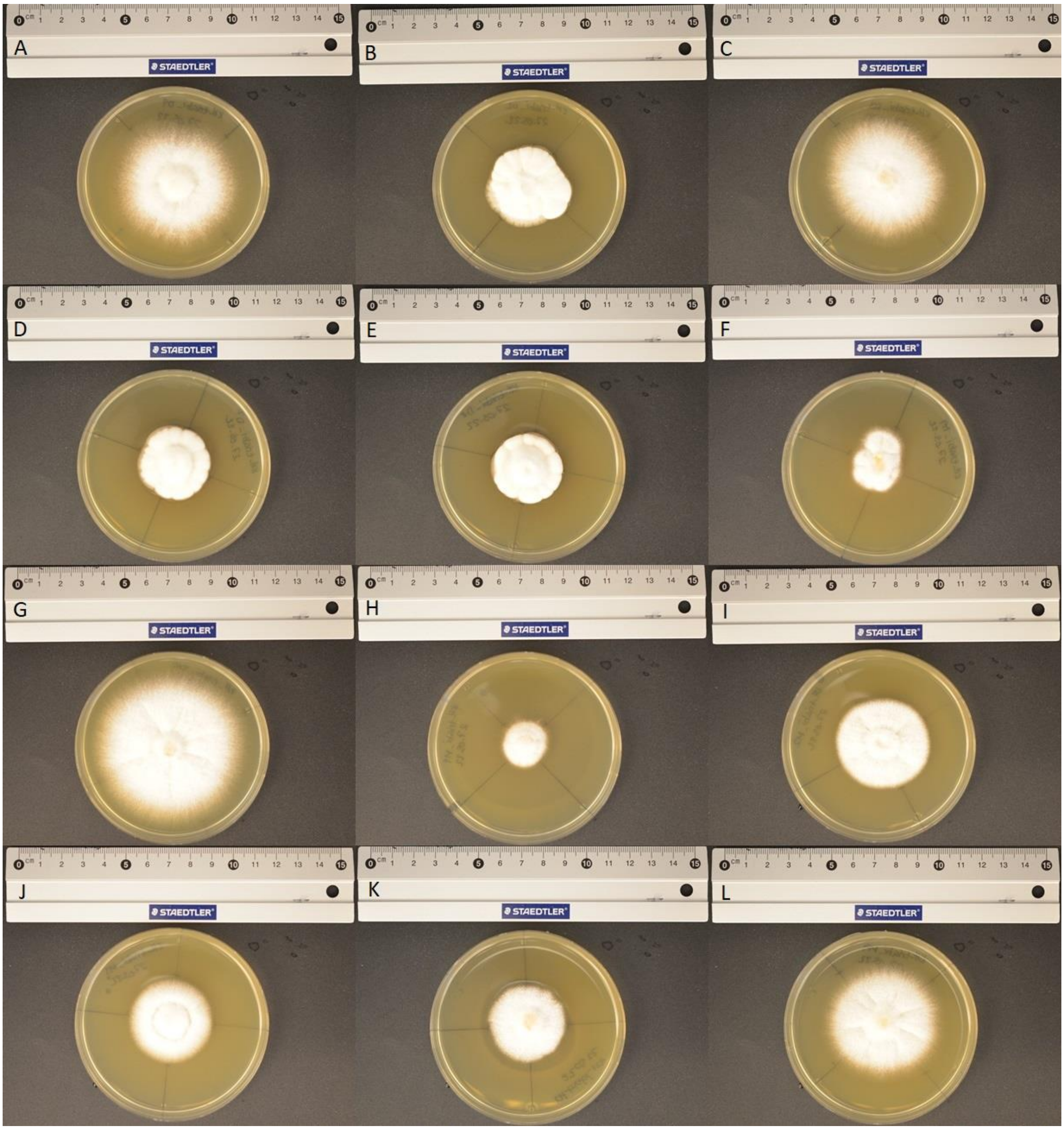


Figure 14: Photographs of monokaryons and dikaryons of *Trichaptum abietinum.* Photographs A-G shows dikaryons and H-L shows monokaryons. There are differences in density and size, but the color is the same for all individuals. Some individuals in both karyotypes have a fluffier mycelium than others (A,C,G,L).

Table 7: all the data from the decomposition experiment for the species *Meruliopsis taxicola.* Each column describes start date, end date, substrate, block number, species, sample-ID, replicates, karyotype, weight before (g), weight after (g), weight loss (g) and weight loss (%).

| **Date start** | **Date end** | **Substrate** | **Block number** | **Species** | **Sample-ID** | **Replicates** | **Type** | **Weight before (g)** | **Weight after (g)** | **Loss (g)** | **Loss (%)** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01.03.2022 | 03.05.2022 | Picea | 182 | *Meruliopsis taxicola* | KH_mertax_M21 | 1 | monokaryon | 0.812 | 0.806 | 0.004 | 0,5 |
| 01.03.2022 | 03.05.2022 | Picea | 42 | *Meruliopsis taxicola* | KH_mertax_M21 | 2 | monokaryon | 0.816 | 0.810 | 0.006 | 0,73 |
| 01.03.2022 | 03.05.2022 | Picea | 191 | *Meruliopsis taxicola* | KH_mertax_M21 | 3 | monokaryon | 0.812 | 0.814 | -0.002 | -0,25 |
| 01.03.2022 | 03.05.2022 | Picea | 173 | *Meruliopsis taxicola* | KH_mertax_M21 | 4 | monokaryon | 0.821 | 0.819 | 0.002 | 0,24 |
| 01.03.2022 | 03.05.2022 | Picea | 70 | *Meruliopsis taxicola* | KH_mertax_M17 | 1 | monokaryon | 0.818 | 0.813 | 0.005 | 0,6 |
| 01.03.2022 | 03.05.2022 | Picea | 65 | *Meruliopsis taxicola* | KH_mertax_M17 | 2 | monokaryon | 0.793 | 0.790 | 0.003 | 0,37 |
| 01.03.2022 | 03.05.2022 | Picea | 192 | *Meruliopsis taxicola* | KH_mertax_M17 | 3 | monokaryon | 0.817 | 0.815 | 0.002 | 0,24 |
| 01.03.2022 | 03.05.2022 | Picea | 239 | *Meruliopsis taxicola* | KH_mertax_M17 | 4 | monokaryon | 0.822 | 0.816 | 0.006 | 0,72 |
| 01.03.2022 | 03.05.2022 | Picea | 181 | *Meruliopsis taxicola* | KH_mertax_M15 | 1 | monokaryon | 0.840 | 0.842 | -0.002 | -0,24 |
| 01.03.2022 | 03.05.2022 | Picea | 43 | *Meruliopsis taxicola* | KH_mertax_M15 | 2 | monokaryon | 0.805 | 0.804 | 0.001 | 0,12 |
| 01.03.2022 | 03.05.2022 | Picea | 177 | *Meruliopsis taxicola* | KH_mertax_M15 | 3 | monokaryon | 0.820 | 0.820 | 0 | 0 |
| 01.03.2022 | 03.05.2022 | Picea | 66 | *Meruliopsis taxicola* | KH_mertax_M15 | 4 | monokaryon | 0.844 | 0.842 | 0.002 | 0,23 |
| 01.03.2022 | 03.05.2022 | Picea | 54 | *Meruliopsis taxicola* | KH_mertax_M10 | 1 | monokaryon | 0.811 | 0.805 | 0.006 | 0,73 |
| 01.03.2022 | 03.05.2022 | Picea | 186 | *Meruliopsis taxicola* | KH_mertax_M10 | 2 | monokaryon | 0.806 | 0.801 | 0.005 | 0,62 |
| 01.03.2022 | 03.05.2022 | Picea | 51 | *Meruliopsis taxicola* | KH_mertax_M10 | 3 | monokaryon | 0.848 | 0.779 | 0.069 | 8,1 |
| 01.03.2022 | 03.05.2022 | Picea | 55 | *Meruliopsis taxicola* | KH_mertax_M10 | 4 | monokaryon | 0.787 | 0.783 | 0 | 0 |
| 01.03.2022 | 03.05.2022 | Picea | 56 | *Meruliopsis taxicola* | KH_mertax_M19 | 1 | monokaryon | 0.833 | 0.824 | 0.009 | 1,1 |
| 01.03.2022 | 03.05.2022 | Picea | 45 | *Meruliopsis taxicola* | KH_mertax_M19 | 2 | monokaryon | 0.800 | 0.794 | 0.006 | 0,75 |
| 01.03.2022 | 03.05.2022 | Picea | 83 | *Meruliopsis taxicola* | KH_mertax_M19 | 3 | monokaryon | 0.801 | 0.796 | 0.005 | 0,62 |
| 01.03.2022 | 03.05.2022 | Picea | 172 | *Meruliopsis taxicola* | KH_mertax_M19 | 4 | monokaryon | 0.821 | 0.809 | 0.012 | 1,4 |
| 01.03.2022 | 03.05.2022 | Picea | 174 | *Meruliopsis taxicola* | KH_mertax_M16 | 1 | monokaryon | 0.840 | 0.837 | 0.003 | 0,35 |
| 01.03.2022 | 03.05.2022 | Picea | 190 | *Meruliopsis taxicola* | KH_mertax_M16 | 2 | monokaryon | 0.811 | 0.813 | -0.002 | -0,25 |
| 01.03.2022 | 03.05.2022 | Picea | 254 | *Meruliopsis taxicola* | KH_mertax_M16 | 3 | monokaryon | 0.824 | 0.818 | 0.006 | 0,72 |
| 01.03.2022 | 03.05.2022 | Picea | 234 | *Meruliopsis taxicola* | KH_mertax_M16 | 4 | monokaryon | 0.814 | 0.812 | 0.002 | 0,24 |
| 01.03.2022 | 03.05.2022 | Picea | 60 | *Meruliopsis taxicola* | KH_mertax_M18 | 1 | monokaryon | 0.804 | 0.800 | 0.004 | 0,5 |
| 01.03.2022 | 03.05.2022 | Picea | 236 | *Meruliopsis taxicola* | KH_mertax_M18 | 2 | monokaryon | 0.787 | 0.792 | -0.005 | -0,64 |
| 01.03.2022 | 03.05.2022 | Picea | 50 | *Meruliopsis taxicola* | KH_mertax_M18 | 3 | monokaryon | 0.778 | 0.774 | 0.004 | 0,5 |
| 01.03.2022 | 03.05.2022 | Picea | 194 | *Meruliopsis taxicola* | KH_mertax_M18 | 4 | monokaryon | 0.796 | 0.786 | 0.010 | 1,3 |
| 01.03.2022 | 03.05.2022 | Picea | 164 | *Meruliopsis taxicola* | KH_mertax_M14 | 1 | monokaryon | 0.804 | 0.803 | 0.001 | 0,12 |
| 01.03.2022 | 03.05.2022 | Picea | 163 | *Meruliopsis taxicola* | KH_mertax_M14 | 2 | monokaryon | 0.777 | 0.777 | 0 | 0 |
| 01.03.2022 | 03.05.2022 | Picea | 165 | *Meruliopsis taxicola* | KH_mertax_M14 | 3 | monokaryon | 0.861 | 0.857 | 0.004 | 0,46 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 01.03.2022 | 03.05.2022 | Picea | 170 | *Meruliopsis taxicola* | KH_mertax_M14 | 4 | monokaryon | 0.814 | 0.756 | 0.058 | 7,1 |
| 01.03.2022 | 03.05.2022 | Picea | 255 | *Meruliopsis taxicola* | KH_mertax_M13 | 1 | monokaryon | 0.813 | 0.799 | 0.014 | 1,7 |
| 01.03.2022 | 03.05.2022 | Picea | 64 | *Meruliopsis taxicola* | KH_mertax_M13 | 2 | monokaryon | 0.787 | 0.786 | 0.001 | 0,13 |
| 01.03.2022 | 03.05.2022 | Picea | 188 | *Meruliopsis taxicola* | KH_mertax_M13 | 3 | monokaryon | 0.785 | 0.788 | -0.003 | -0,38 |
| 01.03.2022 | 03.05.2022 | Picea | 48 | *Meruliopsis taxicola* | KH_mertax_M13 | 4 | monokaryon | 0.783 | 0.778 | 0.005 | 0,63 |
| 01.03.2022 | 03.05.2022 | Picea | 57 | *Meruliopsis taxicola* | KH_mertax_D21 | 1 | dikaryon | 0.823 | 0.822 | 0.001 | 0,12 |
| 01.03.2022 | 03.05.2022 | Picea | 199 | *Meruliopsis taxicola* | KH_mertax_D21 | 2 | dikaryon | 1.301 | 1.283 | 0.018 | 1,4 |
| 01.03.2022 | 03.05.2022 | Picea | 81 | *Meruliopsis taxicola* | KH_mertax_D21 | 3 | dikaryon | 0.788 | 0.787 | 0.001 | 0,13 |
| 01.03.2022 | 03.05.2022 | Picea | 195 | *Meruliopsis taxicola* | KH_mertax_D21 | 4 | dikaryon | 0.814 | 0.810 | 0.004 | 0,49 |
| 01.03.2022 | 03.05.2022 | Picea | 49 | *Meruliopsis taxicola* | KH_mertax_D19 | 1 | dikaryon | 0.822 | 0.815 | 0.007 | 0,85 |
| 01.03.2022 | 03.05.2022 | Picea | 235 | *Meruliopsis taxicola* | KH_mertax_D19 | 2 | dikaryon | 0.837 | 0.830 | 0.007 | 0,84 |
| 01.03.2022 | 03.05.2022 | Picea | 288 | *Meruliopsis taxicola* | KH_mertax_D19 | 3 | dikaryon | 0.826 | 0.826 | 0 | 0 |
| 01.03.2022 | 03.05.2022 | Picea | 193 | *Meruliopsis taxicola* | KH_mertax_D19 | 4 | dikaryon | 0.824 | 0.824 | 0 | 0 |
| 01.03.2022 | 03.05.2022 | Picea | 184 | *Meruliopsis taxicola* | KH_mertax_D17 | 1 | dikaryon | 0.816 | 0.812 | 0.004 | 0,49 |
| 01.03.2022 | 03.05.2022 | Picea | 169 | *Meruliopsis taxicola* | KH_mertax_D17 | 2 | dikaryon | 0.799 | 0.793 | 0.006 | 0,75 |
| 01.03.2022 | 03.05.2022 | Picea | 231 | *Meruliopsis taxicola* | KH_mertax_D17 | 3 | dikaryon | 0.897 | 0.887 | 0.010 | 1,11 |
| 01.03.2022 | 03.05.2022 | Picea | 185 | *Meruliopsis taxicola* | KH_mertax_D17 | 4 | dikaryon | 0.848 | 0.843 | 0.005 | 0,6 |
| 01.03.2022 | 03.05.2022 | Picea | 176 | *Meruliopsis taxicola* | KH_mertax_D16 | 1 | dikaryon | 0.801 | 0.798 | 0.003 | 0,37 |
| 01.03.2022 | 03.05.2022 | Picea | 282 | *Meruliopsis taxicola* | KH_mertax_D16 | 2 | dikaryon | 0.776 | 0.772 | 0.004 | 0,51 |
| 01.03.2022 | 03.05.2022 | Picea | | *Meruliopsis taxicola* | KH_mertax_D16 | 3 | dikaryon | | | | |
| 01.03.2022 | 03.05.2022 | Picea | | *Meruliopsis taxicola* | KH_mertax_D16 | 4 | dikaryon | | | | |
| 01.03.2022 | 03.05.2022 | Picea | 68 | *Meruliopsis taxicola* | KH_mertax_D18 | 1 | dikaryon | 0.872 | 0.868 | 0.004 | 0,45 |
| 01.03.2022 | 03.05.2022 | Picea | 52 | *Meruliopsis taxicola* | KH_mertax_D18 | 2 | dikaryon | 0.829 | 0.823 | 0.006 | 0,72 |
| 01.03.2022 | 03.05.2022 | Picea | 61 | *Meruliopsis taxicola* | KH_mertax_D18 | 3 | dikaryon | 0.794 | 0.791 | 0.003 | 0,37 |
| 01.03.2022 | 03.05.2022 | Picea | 197 | *Meruliopsis taxicola* | KH_mertax_D18 | 4 | dikaryon | 0.874 | 0.842 | 0.032 | 3,66 |
| 01.03.2022 | 03.05.2022 | Picea | 183 | *Meruliopsis taxicola* | KH_mertax_D10 | 1 | dikaryon | 0.811 | 0.803 | 0.008 | 0,98 |
| 01.03.2022 | 03.05.2022 | Picea | 252 | *Meruliopsis taxicola* | KH_mertax_D10 | 2 | dikaryon | 0.819 | 0.813 | 0.006 | 0,73 |
| 01.03.2022 | 03.05.2022 | Picea | 67 | *Meruliopsis taxicola* | KH_mertax_D10 | 3 | dikaryon | 0.802 | 0.796 | 0.006 | 0,75 |
| 01.03.2022 | 03.05.2022 | Picea | 47 | *Meruliopsis taxicola* | KH_mertax_D10 | 4 | dikaryon | 0.858 | 0.851 | 0.007 | 0,81 |
| 01.03.2022 | 03.05.2022 | Picea | 162 | *Meruliopsis taxicola* | KH_mertax_D13 | 1 | dikaryon | 0.805 | 0.800 | 0.005 | 0,62 |
| 01.03.2022 | 03.05.2022 | Picea | 53 | *Meruliopsis taxicola* | KH_mertax_D13 | 2 | dikaryon | 0.784 | 0.781 | 0.003 | 0,38 |
| 01.03.2022 | 03.05.2022 | Picea | 69 | *Meruliopsis taxicola* | KH_mertax_D13 | 3 | dikaryon | 0.841 | 0.835 | 0.006 | 0,71 |
| 01.03.2022 | 03.05.2022 | Picea | 175 | *Meruliopsis taxicola* | KH_mertax_D13 | 4 | dikaryon | 0.799 | 0.792 | 0.007 | 0,88 |
| 01.03.2022 | 03.05.2022 | Picea | 167 | *Meruliopsis taxicola* | KH_mertax_D14 | 1 | dikaryon | 0.813 | 0.808 | 0.005 | 0,61 |
| 01.03.2022 | 03.05.2022 | Picea | 198 | *Meruliopsis taxicola* | KH_mertax_D14 | 2 | dikaryon | 0.778 | 0.775 | 0.003 | 0,39 |
| 01.03.2022 | 03.05.2022 | Picea | 289 | *Meruliopsis taxicola* | KH_mertax_D14 | 3 | dikaryon | 0.793 | 0.791 | 0.002 | 0,25 |
| 01.03.2022 | 03.05.2022 | Picea | 44 | *Meruliopsis taxicola* | KH_mertax_D14 | 4 | dikaryon | 0.796 | 0.791 | 0.005 | 0,63 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01.03.2022 | 03.05.2022 | Picea | 62 | *Meruliopsis taxicola* | KH_mertax_D15 | 1 | dikaryon | 0.817 | 0.814 | 0.003 | 0,37 |
| 01.03.2022 | 03.05.2022 | Picea | 90 | *Meruliopsis taxicola* | KH_mertax_D15 | 2 | dikaryon | 0.787 | 0.783 | 0.004 | 0,51 |
| 01.03.2022 | 03.05.2022 | Picea | 63 | *Meruliopsis taxicola* | KH_mertax_D15 | 3 | dikaryon | 0.800 | 0.799 | 0.001 | 0,13 |
| 01.03.2022 | 03.05.2022 | Picea | 187 | *Meruliopsis taxicola* | KH_mertax_D15 | 4 | dikaryon | 0.789 | 0.785 | 0.004 | 0,51 |

Table 8: all the data from the decomposition experiment for the species *Trichaptum abietinum*. Each column describes type of substrate, start date, end date, block number, species, sample-ID, replicates, karyotype, weight before (g), weight after (g), weight loss (g) and weight loss (%).

| **Substrate** | **Date start** | **Date end** | **Block number** | **Species** | **Sample-ID** | **Replicates** | **Type** | **Dry weight before (g)** | **Dry weight after (g)** | **Loss (g)** | **Loss (%)** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Picea | 17.12.2021 | 18.03.2022 | 99 | *Trichaptum abietinum* | KH_triabi_M8 | 1 | monokaryon | 0.787 | 0.758 | 0.029 | 3,68 |
| Picea | 17.12.2021 | 18.03.2022 | 91 | *Trichaptum abietinum* | KH_triabi_M8 | 2 | monokaryon | 0.832 | 0.803 | 0.029 | 3,49 |
| Picea | 17.12.2021 | 18.03.2022 | 195 | *Trichaptum abietinum* | KH_triabi_M8 | 3 | monokaryon | 0.824 | 0.801 | 0.023 | 2,79 |
| Picea | 17.12.2021 | 18.03.2022 | 184 | *Trichaptum abietinum* | KH_triabi_M8 | 4 | monokaryon | 0.846 | 0.824 | 0.022 | 2,6 |
| Picea | 17.12.2021 | 18.03.2022 | 147 | *Trichaptum abietinum* | KH_triabi_M1 | 1 | monokaryon | 0.852 | 0.829 | 0.023 | 2,7 |
| Picea | 17.12.2021 | 18.03.2022 | 152 | *Trichaptum abietinum* | KH_triabi_M1 | 2 | monokaryon | 0.848 | 0.822 | 0.026 | 3,06 |
| Picea | 17.12.2021 | 18.03.2022 | 166 | *Trichaptum abietinum* | KH_triabi_M1 | 3 | monokaryon | 0.918 | 0.891 | 0.027 | 3,03 |
| Picea | 17.12.2021 | 18.03.2022 | 159 | *Trichaptum abietinum* | KH_triabi_M1 | 4 | monokaryon | 0.800 | 0.777 | 0.023 | 2,88 |
| Picea | 17.12.2021 | 18.03.2022 | 158 | *Trichaptum abietinum* | KH_triabi_M7 | 1 | monokaryon | 0.818 | 0.795 | 0.023 | 2,81 |
| Picea | 17.12.2021 | 18.03.2022 | 241 | *Trichaptum abietinum* | KH_triabi_M7 | 2 | monokaryon | 0.801 | 0.784 | 0.017 | 2,1 |
| Picea | 17.12.2021 | 18.03.2022 | 103 | *Trichaptum abietinum* | KH_triabi_M7 | 3 | monokaryon | 0.840 | 0.806 | 0.034 | 4,05 |
| Picea | 17.12.2021 | 18.03.2022 | 173 | *Trichaptum abietinum* | KH_triabi_M7 | 4 | monokaryon | 0.848 | 0.809 | 0.039 | 4,6 |
| Picea | 17.12.2021 | 18.03.2022 | 174 | *Trichaptum abietinum* | KH_triabi_M3 | 1 | monokaryon | 0.826 | 0.805 | 0.021 | 2,5 |
| Picea | 17.12.2021 | 18.03.2022 | 179 | *Trichaptum abietinum* | KH_triabi_M3 | 2 | monokaryon | 0.814 | 0.787 | 0.027 | 3,3 |
| Picea | 17.12.2021 | 18.03.2022 | 185 | *Trichaptum abietinum* | KH_triabi_M3 | 3 | monokaryon | 0.805 | 0.781 | 0.024 | 2,98 |
| Picea | 17.12.2021 | 18.03.2022 | 168 | *Trichaptum abietinum* | KH_triabi_M3 | 4 | monokaryon | 0.802 | 0.782 | 0.020 | 2,49 |
| Picea | 17.12.2021 | 18.03.2022 | 146 | *Trichaptum abietinum* | KH_triabi_M5 | 1 | monokaryon | 0.839 | 0.812 | 0.027 | 3,2 |
| Picea | 17.12.2021 | 18.03.2022 | 156 | *Trichaptum abietinum* | KH_triabi_M5 | 2 | monokaryon | 0.924 | 0.897 | 0.027 | 2,9 |
| Picea | 17.12.2021 | 18.03.2022 | 108 | *Trichaptum abietinum* | KH_triabi_M5 | 3 | monokaryon | 0.824 | 0.777 | 0.047 | 5,7 |
| Picea | 17.12.2021 | 18.03.2022 | 246 | *Trichaptum abietinum* | KH_triabi_M5 | 4 | monokaryon | 0.822 | 0.802 | 0.020 | 2,4 |
| Picea | 17.12.2021 | 18.03.2022 | 171 | *Trichaptum abietinum* | KH_triabi_M6 | 1 | monokaryon | 0.823 | 0.800 | 0.023 | 2,8 |
| Picea | 17.12.2021 | 18.03.2022 | 107 | *Trichaptum abietinum* | KH_triabi_M6 | 2 | monokaryon | 0.810 | 0.781 | 0.029 | 3,6 |
| Picea | 17.12.2021 | 18.03.2022 | 150 | *Trichaptum abietinum* | KH_triabi_M6 | 3 | monokaryon | 0.800 | 0.784 | 0.016 | 2 |
| Picea | 17.12.2021 | 18.03.2022 | 169 | *Trichaptum abietinum* | KH_triabi_M6 | 4 | monokaryon | 0.783 | 0.759 | 0.024 | 3,06 |
| Picea | 17.12.2021 | 18.03.2022 | 95 | *Trichaptum abietinum* | KH_triabi_M9 | 1 | monokaryon | 0.854 | 0.829 | 0.025 | 2,9 |
| Picea | 17.12.2021 | 18.03.2022 | 247 | *Trichaptum abietinum* | KH_triabi_M9 | 2 | monokaryon | 0.795 | 0.769 | 0.026 | 3,3 |
| Picea | 17.12.2021 | 18.03.2022 | 180 | *Trichaptum abietinum* | KH_triabi_M9 | 3 | monokaryon | 0.801 | 0.778 | 0.023 | 2,9 |
| Picea | 17.12.2021 | 18.03.2022 | 106 | *Trichaptum abietinum* | KH_triabi_M9 | 4 | monokaryon | 0.836 | 0.803 | 0.033 | 3,9 |
| Picea | 17.12.2021 | 18.03.2022 | 190 | *Trichaptum abietinum* | KH_triabi_M10 | 1 | monokaryon | 0.820 | 0.697 | 0.123 | 15 |
| Picea | 17.12.2021 | 18.03.2022 | 193 | *Trichaptum abietinum* | KH_triabi_M10 | 2 | monokaryon | 0.823 | 0.757 | 0.066 | 8 |
| Picea | 17.12.2021 | 18.03.2022 | 157 | *Trichaptum abietinum* | KH_triabi_M10 | 3 | monokaryon | 0.814 | 0.789 | 0.025 | 3,07 |
| Picea | 17.12.2021 | 18.03.2022 | 151 | *Trichaptum abietinum* | KH_triabi_M10 | 4 | monokaryon | 0.817 | 0.800 | 0.017 | 2,1 |
| Picea | 17.12.2021 | 18.03.2022 | 161 | *Trichaptum abietinum* | KH_triabi_M2 | 1 | monokaryon | 0.835 | 0.808 | 0.027 | 3,2 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Picea | 17.12.2021 | 18.03.2022 | 183 | *Trichaptum abietinum* | KH_triabi_M2 | 2 | monokaryon | 0.832 | 0.814 | 0.018 | 2,1 |
| Picea | 17.12.2021 | 18.03.2022 | 191 | *Trichaptum abietinum* | KH_triabi_M2 | 3 | monokaryon | 0.896 | 0.870 | 0.026 | 3 |
| Picea | 17.12.2021 | 18.03.2022 | 93 | *Trichaptum abietinum* | KH_triabi_M2 | 4 | monokaryon | 0.871 | 0.847 | 0.024 | 2,8 |
| Picea | 17.12.2021 | 18.03.2022 | 170 | *Trichaptum abietinum* | KH_triabi_D3 | 1 | dikaryon | 0.845 | 0.818 | 0.027 | 3,2 |
| Picea | 17.12.2021 | 18.03.2022 | 98 | *Trichaptum abietinum* | KH_triabi_D3 | 2 | dikaryon | 0.857 | 0.827 | 0.030 | 3,5 |
| Picea | 17.12.2021 | 18.03.2022 | 112 | *Trichaptum abietinum* | KH_triabi_D3 | 3 | dikaryon | 0.813 | 0.789 | 0.024 | 3 |
| Picea | 17.12.2021 | 18.03.2022 | 94 | *Trichaptum abietinum* | KH_triabi_D3 | 4 | dikaryon | 0.873 | 0.847 | 0.026 | 3 |
| Picea | 17.12.2021 | 18.03.2022 | 97 | *Trichaptum abietinum* | KH_triabi_D1 | 1 | dikaryon | 0.866 | 0.843 | 0.023 | 2,7 |
| Picea | 17.12.2021 | 18.03.2022 | 92 | *Trichaptum abietinum* | KH_triabi_D1 | 2 | dikaryon | 0.843 | 0.818 | 0.025 | 3 |
| Picea | 17.12.2021 | 18.03.2022 | 148 | *Trichaptum abietinum* | KH_triabi_D1 | 3 | dikaryon | 0.813 | 0.791 | 0.022 | 2,7 |
| Picea | 17.12.2021 | 18.03.2022 | 249 | *Trichaptum abietinum* | KH_triabi_D1 | 4 | dikaryon | 0.846 | 0.827 | 0.019 | 2,3 |
| Picea | 17.12.2021 | 18.03.2022 | 163 | *Trichaptum abietinum* | KH_triabi_D5 | 1 | dikaryon | 0.800 | 0.776 | 0.024 | 3 |
| Picea | 17.12.2021 | 18.03.2022 | 194 | *Trichaptum abietinum* | KH_triabi_D5 | 2 | dikaryon | 0.856 | 0.832 | 0.024 | 2,8 |
| Picea | 17.12.2021 | 18.03.2022 | 192 | *Trichaptum abietinum* | KH_triabi_D5 | 3 | dikaryon | 0.823 | 0.802 | 0.021 | 2,6 |
| Picea | 17.12.2021 | 18.03.2022 | 155 | *Trichaptum abietinum* | KH_triabi_D5 | 4 | dikaryon | 0.805 | 0.781 | 0.024 | 3 |
| Picea | 17.12.2021 | 18.03.2022 | 154 | *Trichaptum abietinum* | KH_triabi_D6 | 1 | dikaryon | 0.809 | 0.785 | 0.024 | 3 |
| Picea | 17.12.2021 | 18.03.2022 | 242 | *Trichaptum abietinum* | KH_triabi_D6 | 2 | dikaryon | 0.815 | 0.794 | 0.021 | 2,6 |
| Picea | 17.12.2021 | 18.03.2022 | 188 | *Trichaptum abietinum* | KH_triabi_D6 | 3 | dikaryon | 0.832 | 0.807 | 0.025 | 3 |
| Picea | 17.12.2021 | 18.03.2022 | 162 | *Trichaptum abietinum* | KH_triabi_D6 | 4 | dikaryon | 0.807 | 0.789 | 0.018 | 2,2 |
| Picea | 17.12.2021 | 18.03.2022 | 109 | *Trichaptum abietinum* | KH_triabi_D7 | 1 | dikaryon | 0.851 | 0.821 | 0.030 | 3,5 |
| Picea | 17.12.2021 | 18.03.2022 | 164 | *Trichaptum abietinum* | KH_triabi_D7 | 2 | dikaryon | 0.843 | 0.816 | 0.027 | 3,2 |
| Picea | 17.12.2021 | 18.03.2022 | 182 | *Trichaptum abietinum* | KH_triabi_D7 | 3 | dikaryon | 0.837 | 0.812 | 0.025 | 3 |
| Picea | 17.12.2021 | 18.03.2022 | 153 | *Trichaptum abietinum* | KH_triabi_D7 | 4 | dikaryon | 0.815 | 0.792 | 0.023 | 2,8 |
| Picea | 17.12.2021 | 18.03.2022 | 244 | *Trichaptum abietinum* | KH_triabi_D8 | 1 | dikaryon | 0.849 | 0.829 | 0.020 | 2,4 |
| Picea | 17.12.2021 | 18.03.2022 | 175 | *Trichaptum abietinum* | KH_triabi_D8 | 2 | dikaryon | 0.838 | 0.813 | 0.025 | 3 |
| Picea | 17.12.2021 | 18.03.2022 | 245 | *Trichaptum abietinum* | KH_triabi_D8 | 3 | dikaryon | 0.815 | 0.793 | 0.022 | 2,7 |
| Picea | 17.12.2021 | 18.03.2022 | 160 | *Trichaptum abietinum* | KH_triabi_D8 | 4 | dikaryon | 0.807 | 0.781 | 0.026 | 3,2 |
| Picea | 17.12.2021 | 18.03.2022 | 177 | *Trichaptum abietinum* | KH_triabi_D9 | 1 | dikaryon | 0.829 | 0.804 | 0.025 | 3 |
| Picea | 17.12.2021 | 18.03.2022 | 111 | *Trichaptum abietinum* | KH_triabi_D9 | 2 | dikaryon | 0.943 | 0.913 | 0.030 | 3,1 |
| Picea | 17.12.2021 | 18.03.2022 | 102 | *Trichaptum abietinum* | KH_triabi_D9 | 3 | dikaryon | 0.804 | 0,776 | 0.028 | 3,5 |
| Picea | 17.12.2021 | 18.03.2022 | 250 | *Trichaptum abietinum* | KH_triabi_D9 | 4 | dikaryon | 0.825 | 0.805 | 0.020 | 2,4 |
| Picea | 17.12.2021 | 18.03.2022 | 115 | *Trichaptum abietinum* | KH_triabi_D10 | 1 | dikaryon | 0.820 | 0.787 | 0.033 | 4 |
| Picea | 17.12.2021 | 18.03.2022 | 149 | *Trichaptum abietinum* | KH_triabi_D10 | 2 | dikaryon | 0.832 | 0.806 | 0.026 | 3 |
| Picea | 17.12.2021 | 18.03.2022 | 176 | *Trichaptum abietinum* | KH_triabi_D10 | 3 | dikaryon | 0.808 | 0.786 | 0.022 | 2,7 |
| Picea | 17.12.2021 | 18.03.2022 | 189 | *Trichaptum abietinum* | KH_triabi_D10 | 4 | dikaryon | 0.791 | 0.768 | 0.023 | 2,9 |

Table 9: all the data from the decomposition experiment for the species *Gloeophyllum sepiarium.* Each column describes start date, end date, type of substrate, block number, species, sample-ID, karyotype, replicates, weight before (g), weight after (g), weight loss (g) and weight loss (%).

| **Date start** | **Date end** | **Substrate** | **Block number** | **Species** | **Sample-ID** | **Type** | **Replicates** | **weight before (g)** | **weight after (g)** | **Loss (g)** | **Loss (%)** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 17.03.2022 | 16.05.2022 | Picea | 111 | *Gloeophyllum sepiarium* | KH_glosep_M3 | monokaryon | 1 | 0.772 | 0.776 | -0.004 | -0,52 |
| 17.03.2022 | 16.05.2022 | Picea | 115 | *Gloeophyllum sepiarium* | KH_glosep_M3 | monokaryon | 2 | 0.905 | 0.912 | -0.007 | -0,77 |
| 17.03.2022 | 16.05.2022 | Picea | 270 | *Gloeophyllum sepiarium* | KH_glosep_M3 | monokaryon | 3 | 0.800 | 0.807 | -0.007 | -0,87 |
| 17.03.2022 | 16.05.2022 | Picea | 237 | *Gloeophyllum sepiarium* | KH_glosep_M3 | monokaryon | 4 | 0.772 | 0.777 | -0.005 | -0,65 |
| 17.03.2022 | 16.05.2022 | Picea | 125 | *Gloeophyllum sepiarium* | KH_glosep_M4 | monokaryon | 1 | 0.791 | 0.801 | -0.010 | -1,3 |
| 17.03.2022 | 16.05.2022 | Picea | 217 | *Gloeophyllum sepiarium* | KH_glosep_M4 | monokaryon | 2 | 0.824 | 0.829 | -0.005 | -0,61 |
| 17.03.2022 | 16.05.2022 | Picea | 209 | *Gloeophyllum sepiarium* | KH_glosep_M4 | monokaryon | 3 | 0.805 | 0.809 | -0.004 | -0,5 |
| 17.03.2022 | 16.05.2022 | Picea | 212 | *Gloeophyllum sepiarium* | KH_glosep_M4 | monokaryon | 4 | 0.811 | 0.816 | -0.005 | -0,62 |
| 17.03.2022 | 16.05.2022 | Picea | 129 | *Gloeophyllum sepiarium* | KH_glosep_M8 | monokaryon | 1 | 0.838 | 0.840 | -0.002 | -0,24 |
| 17.03.2022 | 16.05.2022 | Picea | 213 | *Gloeophyllum sepiarium* | KH_glosep_M8 | monokaryon | 2 | 0.794 | 0.801 | -0.007 | -0,88 |
| 17.03.2022 | 16.05.2022 | Picea | 210 | *Gloeophyllum sepiarium* | KH_glosep_M8 | monokaryon | 3 | 0.787 | 0.792 | -0.005 | -0,64 |
| 17.03.2022 | 16.05.2022 | Picea | 206 | *Gloeophyllum sepiarium* | KH_glosep_M8 | monokaryon | 4 | 0.789 | 0.796 | -0.007 | -0,89 |
| 17.03.2022 | 16.05.2022 | Picea | 292 | *Gloeophyllum sepiarium* | KH_glosep_D1 | dikaryon | 1 | 0.802 | 0.808 | -0.006 | -0,75 |
| 17.03.2022 | 16.05.2022 | Picea | 253 | *Gloeophyllum sepiarium* | KH_glosep_D1 | dikaryon | 2 | 0.775 | 0.782 | -0.007 | -0,9 |
| 17.03.2022 | 16.05.2022 | Picea | 204 | *Gloeophyllum sepiarium* | KH_glosep_D1 | dikaryon | 3 | 0.938 | 0.942 | -0.004 | -0,43 |
| 17.03.2022 | 16.05.2022 | Picea | 128 | *Gloeophyllum sepiarium* | KH_glosep_D1 | dikaryon | 4 | 0.825 | 0.831 | -0.006 | -0,72 |
| 17.03.2022 | 16.05.2022 | Picea | 263 | *Gloeophyllum sepiarium* | KH_glosep_D2 | dikaryon | 1 | 0.829 | 0.828 | 0.001 | 0,12 |
| 17.03.2022 | 16.05.2022 | Picea | 279 | *Gloeophyllum sepiarium* | KH_glosep_D2 | dikaryon | 2 | 0.804 | 0.800 | 0.004 | 0,5 |
| 17.03.2022 | 16.05.2022 | Picea | 264 | *Gloeophyllum sepiarium* | KH_glosep_D2 | dikaryon | 3 | 0.823 | 0.824 | -0.001 | -0,12 |
| 17.03.2022 | 16.05.2022 | Picea | 230 | *Gloeophyllum sepiarium* | KH_glosep_D2 | dikaryon | 4 | 0.803 | 0.810 | -0.007 | -0,87 |
| 17.03.2022 | 16.05.2022 | Picea | 208 | *Gloeophyllum sepiarium* | KH_glosep_D3 | dikaryon | 1 | 0.842 | 0.843 | -0.001 | -0,11 |
| 17.03.2022 | 16.05.2022 | Picea | 117 | *Gloeophyllum sepiarium* | KH_glosep_D3 | dikaryon | 2 | 0.831 | 0.834 | -0.003 | -0,36 |
| 17.03.2022 | 16.05.2022 | Picea | 221 | *Gloeophyllum sepiarium* | KH_glosep_D3 | dikaryon | 3 | 0.791 | 0.798 | -0.007 | -0,88 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 17.03.2022 | 16.05.2022 | Picea | 229 | *Gloeophyllum sepiarium* | KH_glosep_D3 | dikaryon | 4 | 0.824 | 0.829 | -0.005 | -0,61 |
| 17.03.2022 | 16.05.2022 | Picea | 121 | *Gloeophyllum sepiarium* | KH_glosep_D4 | dikaryon | 1 | 0.778 | 0.784 | -0.006 | -0,77 |
| 17.03.2022 | 16.05.2022 | Picea | 122 | *Gloeophyllum sepiarium* | KH_glosep_D4 | dikaryon | 2 | 0.800 | 0.807 | -0.007 | -0,87 |
| 17.03.2022 | 16.05.2022 | Picea | 142 | *Gloeophyllum sepiarium* | KH_glosep_D4 | dikaryon | 3 | 0.786 | 0.790 | -0.004 | -0,51 |
| 17.03.2022 | 16.05.2022 | Picea | 205 | *Gloeophyllum sepiarium* | KH_glosep_D4 | dikaryon | 4 | 0.813 | 0.818 | -0.005 | -0,62 |
| 17.03.2022 | 16.05.2022 | Picea | 226 | *Gloeophyllum sepiarium* | KH_glosep_D5 | dikaryon | 1 | 0.810 | 0.815 | -0.005 | -0,62 |
| 17.03.2022 | 16.05.2022 | Picea | 220 | *Gloeophyllum sepiarium* | KH_glosep_D5 | dikaryon | 2 | 0.809 | 0.816 | -0.007 | -0,87 |
| 17.03.2022 | 16.05.2022 | Picea | 291 | *Gloeophyllum sepiarium* | KH_glosep_D5 | dikaryon | 3 | 0.778 | 0.785 | -0.008 | -1,03 |
| 17.03.2022 | 16.05.2022 | Picea | 203 | *Gloeophyllum sepiarium* | KH_glosep_D5 | dikaryon | 4 | 0.803 | 0.810 | -0.007 | -0,87 |
| 17.03.2022 | 16.05.2022 | Picea | 260 | *Gloeophyllum sepiarium* | KH_glosep_D6 | dikaryon | 1 | 0.806 | 0.812 | -0.006 | -0,77 |
| 17.03.2022 | 16.05.2022 | Picea | 207 | *Gloeophyllum sepiarium* | KH_glosep_D6 | dikaryon | 2 | 0.822 | 0.829 | -0.007 | -0,85 |
| 17.03.2022 | 16.05.2022 | Picea | 201 | *Gloeophyllum sepiarium* | KH_glosep_D6 | dikaryon | 3 | 0.815 | 0.822 | -0.007 | -0,86 |
| 17.03.2022 | 16.05.2022 | Picea | 240 | *Gloeophyllum sepiarium* | KH_glosep_D6 | dikaryon | 4 | 0.750 | 0.754 | -0.004 | -0,53 |
| 17.03.2022 | 16.05.2022 | Picea | 293 | *Gloeophyllum sepiarium* | KH_glosep_D7 | dikaryon | 1 | 0.825 | 0.833 | -0.008 | -0,97 |
| 17.03.2022 | 16.05.2022 | Picea | 295 | *Gloeophyllum sepiarium* | KH_glosep_D7 | dikaryon | 2 | 0.874 | 0.831 | 0.043 | 4,9 |
| 17.03.2022 | 16.05.2022 | Picea | 141 | *Gloeophyllum sepiarium* | KH_glosep_D7 | dikaryon | 3 | 0.803 | 0.809 | -0.006 | -0,75 |
| 17.03.2022 | 16.05.2022 | Picea | 261 | *Gloeophyllum sepiarium* | KH_glosep_D7 | dikaryon | 4 | 0.798 | 0.801 | -0.003 | -0,38 |
| 17.03.2022 | 16.05.2022 | Picea | 227 | *Gloeophyllum sepiarium* | KH_glosep_D8 | dikaryon | 1 | 0.781 | 0.786 | -0.005 | -0,64 |
| 17.03.2022 | 16.05.2022 | Picea | 214 | *Gloeophyllum sepiarium* | KH_glosep_D8 | dikaryon | 2 | 0.790 | 0.774 | 0.016 | 2 |
| 17.03.2022 | 16.05.2022 | Picea | 228 | *Gloeophyllum sepiarium* | KH_glosep_D8 | dikaryon | 3 | 0.766 | 0.772 | -0.006 | 0,78 |
| 17.03.2022 | 16.05.2022 | Picea | 223 | *Gloeophyllum sepiarium* | KH_glosep_D8 | dikaryon | 4 | 0.822 | 0.828 | -0.006 | -0,73 |

Table 10: all the data from the decomposition experiment for the species *Phellopilus nigrolimitatus*. Each column describes start date, end date, type of substrate, block number, species, sample-ID, karyotype, replicates, weight before (g), weight after (g), weight loss (g) and weight loss (%).

| Date start | Date end | Substrate | Block number | Species | Sample-ID | type | replicates | Dry weight before (g) | Dry weight after (g) | loss (g) | loss (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 17.03.2022 | 16.05.2022 | Picea | 126 | *Phellopilus nigrolimitatus* | KH_phenig_M6 | monokaryon | 1 | 0.804 | 0.810 | -0.006 | -0,75 |
| 17.03.2022 | 16.05.2022 | Picea | 269 | *Phellopilus nigrolimitatus* | KH_phenig_M6 | monokaryon | 2 | 1.053 | 1.053 | 0 | 0 |
| 17.03.2022 | 16.05.2022 | Picea | 211 | *Phellopilus nigrolimitatus* | KH_phenig_M6 | monokaryon | 3 | 0.863 | 0.867 | -0.004 | -0,46 |
| 17.03.2022 | 16.05.2022 | Picea | 232 | *Phellopilus nigrolimitatus* | KH_phenig_M6 | monokaryon | 4 | 0.777 | 0.783 | -0.006 | -0,77 |
| 17.03.2022 | 16.05.2022 | Picea | 276 | *Phellopilus nigrolimitatus* | KH_phenig_M4 | monokaryon | 1 | 0.986 | 0.988 | -0.002 | 0,2 |
| 17.03.2022 | 16.05.2022 | Picea | 300 | *Phellopilus nigrolimitatus* | KH_phenig_M4 | monokaryon | 2 | 0.800 | 0.806 | -0.006 | -0,75 |
| 17.03.2022 | 16.05.2022 | Picea | 113 | *Phellopilus nigrolimitatus* | KH_phenig_M4 | monokaryon | 3 | 0.793 | 0.801 | -0.008 | -0,1 |
| 17.03.2022 | 16.05.2022 | Picea | 118 | *Phellopilus nigrolimitatus* | KH_phenig_M4 | monokaryon | 4 | 0.788 | 0.793 | -0.005 | -0,63 |
| 17.03.2022 | 16.05.2022 | Picea | 277 | *Phellopilus nigrolimitatus* | KH_phenig_M9 | monokaryon | 1 | 0.827 | 0.829 | -0.002 | -0,24 |
| 17.03.2022 | 16.05.2022 | Picea | 251 | *Phellopilus nigrolimitatus* | KH_phenig_M9 | monokaryon | 2 | 1.349 | 1.333 | 0.016 | 1,18 |
| 17.03.2022 | 16.05.2022 | Picea | 130 | *Phellopilus nigrolimitatus* | KH_phenig_M9 | monokaryon | 3 | 0.825 | 0.833 | -0.008 | -0,97 |
| 17.03.2022 | 16.05.2022 | Picea | 219 | *Phellopilus nigrolimitatus* | KH_phenig_M9 | monokaryon | 4 | 0.827 | 0.832 | -0.005 | -0,6 |
| 17.03.2022 | 16.05.2022 | Picea | 127 | *Phellopilus nigrolimitatus* | KH_phenig_D1 | dikaryon | 1 | 0.841 | 0.847 | -0.006 | -0,71 |
| 17.03.2022 | 16.05.2022 | Picea | 224 | *Phellopilus nigrolimitatus* | KH_phenig_D1 | dikaryon | 2 | 0.822 | 0.827 | -0.005 | -0,61 |
| 17.03.2022 | 16.05.2022 | Picea | 266 | *Phellopilus nigrolimitatus* | KH_phenig_D1 | dikaryon | 3 | 0.823 | 0.829 | -0.006 | -0,73 |
| 17.03.2022 | 16.05.2022 | Picea | 299 | *Phellopilus nigrolimitatus* | KH_phenig_D1 | dikaryon | 4 | 0.803 | 0.812 | -0.009 | -1,12 |
| 17.03.2022 | 16.05.2022 | Picea | 149 | *Phellopilus nigrolimitatus* | KH_phenig_D2 | dikaryon | 1 | 0.797 | 0.803 | -0.006 | -0,75 |
| 17.03.2022 | 16.05.2022 | Picea | 146 | *Phellopilus nigrolimitatus* | KH_phenig_D2 | dikaryon | 2 | 0.824 | 0.831 | -0.007 | -0,85 |
| 17.03.2022 | 16.05.2022 | Picea | 268 | *Phellopilus nigrolimitatus* | KH_phenig_D2 | dikaryon | 3 | 0.829 | 0.835 | -0.006 | -0,72 |
| 17.03.2022 | 16.05.2022 | Picea | 258 | *Phellopilus nigrolimitatus* | KH_phenig_D2 | dikaryon | 4 | 0.790 | 0.800 | -0.010 | -1,3 |
| 17.03.2022 | 16.05.2022 | Picea | 297 | *Phellopilus nigrolimitatus* | KH_phenig_D3 | dikaryon | 1 | 0.760 | 0.766 | -0.006 | -0,79 |
| 17.03.2022 | 16.05.2022 | Picea | 294 | *Phellopilus nigrolimitatus* | KH_phenig_D3 | dikaryon | 2 | 0.911 | 0.914 | -0.003 | -0,33 |
| 17.03.2022 | 16.05.2022 | Picea | 275 | *Phellopilus nigrolimitatus* | KH_phenig_D3 | dikaryon | 3 | 0.826 | 0.833 | -0.007 | -0,85 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 17.03.2022 | 16.05.2022 | Picea | 202 | *Phellopilus nigrolimitatus* | KH_phenig_D3 | dikaryon | 4 | 0.796 | 0.806 | -0.010 | -1,26 |
| 17.03.2022 | 16.05.2022 | Picea | 222 | *Phellopilus nigrolimitatus* | KH_phenig_D5 | dikaryon | 1 | 0.817 | 0.826 | -0.009 | -1,1 |
| 17.03.2022 | 16.05.2022 | Picea | 267 | *Phellopilus nigrolimitatus* | KH_phenig_D5 | dikaryon | 2 | 0.946 | 0.954 | -0.008 | -0,85 |
| 17.03.2022 | 16.05.2022 | Picea | 215 | *Phellopilus nigrolimitatus* | KH_phenig_D5 | dikaryon | 3 | 0.816 | 0.827 | -0.011 | -1,35 |
| 17.03.2022 | 16.05.2022 | Picea | 225 | *Phellopilus nigrolimitatus* | KH_phenig_D5 | dikaryon | 4 | 0.821 | 0.830 | -0.009 | -1,1 |
| 17.03.2022 | 16.05.2022 | Picea | 278 | *Phellopilus nigrolimitatus* | KH_phenig_D6 | dikaryon | 1 | 0.788 | 0.793 | -0.005 | -0,63 |
| 17.03.2022 | 16.05.2022 | Picea | 280 | *Phellopilus nigrolimitatus* | KH_phenig_D6 | dikaryon | 2 | 0.807 | 0.817 | -0.010 | -1,24 |
| 17.03.2022 | 16.05.2022 | Picea | 272 | *Phellopilus nigrolimitatus* | KH_phenig_D6 | dikaryon | 3 | 0.824 | 0.827 | -0.003 | -0,36 |
| 17.03.2022 | 16.05.2022 | Picea | 257 | *Phellopilus nigrolimitatus* | KH_phenig_D6 | dikaryon | 4 | 0.778 | 0.784 | -0.006 | -0,77 |
| 17.03.2022 | 16.05.2022 | Picea | 271 | *Phellopilus nigrolimitatus* | KH_phenig_D7 | dikaryon | 1 | 0.801 | 0.808 | -0.007 | -0,87 |
| 17.03.2022 | 16.05.2022 | Picea | 262 | *Phellopilus nigrolimitatus* | KH_phenig_D7 | dikaryon | 2 | 0.820 | 0.828 | -0.008 | -0,98 |
| 17.03.2022 | 16.05.2022 | Picea | 223 | *Phellopilus nigrolimitatus* | KH_phenig_D7 | dikaryon | 3 | 0.782 | 0.788 | -0.006 | -0,76 |
| 17.03.2022 | 16.05.2022 | Picea | 124 | *Phellopilus nigrolimitatus* | KH_phenig_D7 | dikaryon | 4 | 0.799 | 0.809 | -0.010 | -1,25 |
| 17.03.2022 | 16.05.2022 | Picea | 218 | *Phellopilus nigrolimitatus* | KH_phenig_D9 | dikaryon | 1 | 0.809 | 0.816 | -0.007 | -0,87 |
| 17.03.2022 | 16.05.2022 | Picea | 273 | *Phellopilus nigrolimitatus* | KH_phenig_D9 | dikaryon | 2 | 0.811 | 0.813 | -0.002 | -0,25 |
| 17.03.2022 | 16.05.2022 | Picea | 123 | *Phellopilus nigrolimitatus* | KH_phenig_D9 | dikaryon | 3 | 0.848 | 0.856 | -0.008 | -0,94 |
| 17.03.2022 | 16.05.2022 | Picea | 216 | *Phellopilus nigrolimitatus* | KH_phenig_D9 | dikaryon | 4 | 0.817 | 0.821 | -0.004 | -0,49 |
| 17.03.2022 | 16.05.2022 | Picea | 148 | *Phellopilus nigrolimitatus* | KH_phenig_D10 | dikaryon | 1 | 0.823 | 0.827 | -0.004 | -0,49 |
| 17.03.2022 | 16.05.2022 | Picea | 238 | *Phellopilus nigrolimitatus* | KH_phenig_D10 | dikaryon | 2 | 0.841 | 0.847 | -0.006 | -0,71 |
| 17.03.2022 | 16.05.2022 | Picea | 296 | *Phellopilus nigrolimitatus* | KH_phenig_D10 | dikaryon | 3 | 0.815 | 0.822 | -0.007 | -0,86 |
| 17.03.2022 | 16.05.2022 | Picea | 298 | *Phellopilus nigrolimitatus* | KH_phenig_D10 | dikaryon | 4 | 0.831 | 0.835 | -0.004 | -0,48 |
| 17.03.2022 | 16.05.2022 | Picea | 274 | *Phellopilus nigrolimitatus* | KH_phenig_D8 | dikaryon | 1 | 0.827 | 0.825 | 0.002 | 0,24 |
| 17.03.2022 | 16.05.2022 | Picea | 265 | *Phellopilus nigrolimitatus* | KH_phenig_D8 | dikaryon | 2 | 0.824 | 0.830 | -0.006 | -0,73 |

Table 11: all the data from the decomposition experiment for the species *Phellinus viticola.* Each column describes start date, end date, type of substrate, block number, species, sample-ID, karyotype, replicates, weight before (g), weight after (g), weight loss (g) and weight loss (%).

| **Date start** | **Date end** | **Substrate** | **Block number** | **species** | **Sample-ID** | **type** | **replicates** | **Weight before (g)** | **Weight after (g)** | **Loss (g)** | **Loss (%)** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 07.03.2022 | 09.05.2022 | Picea | 38 | *Phellinus viticola* | KH_phevit_M9 | monokaryon | 1 | 0.818 | 0.821 | -0.003 | -0,37 |
| 07.03.2022 | 09.05.2022 | Picea | 20 | *Phellinus viticola* | KH_phevit_M9 | monokaryon | 2 | 0.794 | 0.792 | 0.002 | 0,25 |
| 07.03.2022 | 09.05.2022 | Picea | 14 | *Phellinus viticola* | KH_phevit_M9 | monokaryon | 3 | 0.835 | 0.837 | -0.002 | -0,24 |
| 07.03.2022 | 09.05.2022 | Picea | 11 | *Phellinus viticola* | KH_phevit_M9 | monokaryon | 4 | 0.826 | 0.836 | -0.010 | -1,21 |
| 07.03.2022 | 09.05.2022 | Picea | 29 | *Phellinus viticola* | KH_phevit_M8 | monokaryon | 1 | 0.798 | 0.806 | -0.008 | -1 |
| 07.03.2022 | 09.05.2022 | Picea | 7 | *Phellinus viticola* | KH_phevit_M8 | monokaryon | 2 | 0.809 | 0.811 | -0.003 | -0,37 |
| 07.03.2022 | 09.05.2022 | Picea | 80 | *Phellinus viticola* | KH_phevit_M8 | monokaryon | 3 | 0.915 | 0.918 | -0.003 | -0,32 |
| 07.03.2022 | 09.05.2022 | Picea | 84 | *Phellinus viticola* | KH_phevit_M8 | monokaryon | 4 | 0.817 | 0.822 | -0.005 | -0,61 |
| 07.03.2022 | 09.05.2022 | Picea | 27 | *Phellinus viticola* | KH_phevit_M3 | monokaryon | 1 | 0.797 | 0.800 | -0.003 | -0,38 |
| 07.03.2022 | 09.05.2022 | Picea | 102 | *Phellinus viticola* | KH_phevit_M3 | monokaryon | 2 | 0.801 | 0.810 | -0.009 | -1,12 |
| 07.03.2022 | 09.05.2022 | Picea | 243 | *Phellinus viticola* | KH_phevit_M3 | monokaryon | 3 | 0.823 | 0.829 | -0.006 | -0,73 |
| 07.03.2022 | 09.05.2022 | Picea | 103 | *Phellinus viticola* | KH_phevit_M3 | monokaryon | 4 | 0.825 | 0.829 | -0.004 | -0,49 |
| 07.03.2022 | 09.05.2022 | Picea | 15 | *Phellinus viticola* | KH_phevit_D1 | dikaryon | 1 | 0.804 | 0.807 | -0.003 | -0,37 |
| 07.03.2022 | 09.05.2022 | Picea | 174 | *Phellinus viticola* | KH_phevit_D1 | dikaryon | 2 | 0.840 | 0.814 | 0.026 | 3,1 |
| 07.03.2022 | 09.05.2022 | Picea | 148 | *Phellinus viticola* | KH_phevit_D1 | dikaryon | 3 | 0.823 | 0.797 | 0.026 | 3,16 |
| 07.03.2022 | 09.05.2022 | Picea | 26 | *Phellinus viticola* | KH_phevit_D1 | dikaryon | 4 | 0.958 | 0.962 | -0.004 | -0,42 |
| 07.03.2022 | 09.05.2022 | Picea | 153 | *Phellinus viticola* | KH_phevit_D2 | dikaryon | 1 | 0.859 | 0.859 | 0 | 0 |
| 07.03.2022 | 09.05.2022 | Picea | 116 | *Phellinus viticola* | KH_phevit_D2 | dikaryon | 2 | 0.787 | 0.788 | -0.001 | -0,12 |
| 07.03.2022 | 09.05.2022 | Picea | 95 | *Phellinus viticola* | KH_phevit_D2 | dikaryon | 3 | 0.848 | 0.851 | -0.003 | -0,35 |
| 07.03.2022 | 09.05.2022 | Picea | 99 | *Phellinus viticola* | KH_phevit_D2 | dikaryon | 4 | 0.825 | 0.825 | 0 | 0 |
| 07.03.2022 | 09.05.2022 | Picea | 6 | *Phellinus viticola* | KH_phevit_D3 | dikaryon | 1 | 0.813 | 0.814 | -0.001 | -12 |
| 07.03.2022 | 09.05.2022 | Picea | 16 | *Phellinus viticola* | KH_phevit_D3 | dikaryon | 2 | 0.802 | 0.804 | -0.002 | -0,25 |
| 07.03.2022 | 09.05.2022 | Picea | 114 | *Phellinus viticola* | KH_phevit_D3 | dikaryon | 3 | 0.794 | 0.796 | -0.002 | -0,25 |
| 07.03.2022 | 09.05.2022 | Picea | 37 | *Phellinus viticola* | KH_phevit_D3 | dikaryon | 4 | 0.811 | 0.810 | 0.001 | 0,12 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 07.03.2022 | 09.05.2022 | Picea | 36 | *Phellinus viticola* | KH_phevit_D4 | dikaryon | 1 | 0.745 | 0.744 | 0.001 | 0,13 |
| 07.03.2022 | 09.05.2022 | Picea | 71 | *Phellinus viticola* | KH_phevit_D4 | dikaryon | 2 | 0.802 | 0.803 | -0.001 | -0,12 |
| 07.03.2022 | 09.05.2022 | Picea | 79 | *Phellinus viticola* | KH_phevit_D4 | dikaryon | 3 | 0.778 | 0.773 | 0.005 | 0,64 |
| 07.03.2022 | 09.05.2022 | Picea | 21 | *Phellinus viticola* | KH_phevit_D4 | dikaryon | 4 | 0.800 | 0.781 | 0.019 | 2,4 |
| 07.03.2022 | 09.05.2022 | Picea | 247 | *Phellinus viticola* | KH_phevit_D6 | dikaryon | 1 | 0.798 | 0.799 | -0.001 | -0,13 |
| 07.03.2022 | 09.05.2022 | Picea | 19 | *Phellinus viticola* | KH_phevit_D6 | dikaryon | 2 | 0.804 | 0.807 | -0.003 | -0,37 |
| 07.03.2022 | 09.05.2022 | Picea | 1 | *Phellinus viticola* | KH_phevit_D6 | dikaryon | 3 | 0.817 | 0.819 | -0.002 | -0,24 |
| 07.03.2022 | 09.05.2022 | Picea | 131 | *Phellinus viticola* | KH_phevit_D6 | dikaryon | 4 | 0.805 | 0.808 | -0.003 | -0,37 |
| 07.03.2022 | 09.05.2022 | Picea | 3 | *Phellinus viticola* | KH_phevit_D7 | dikaryon | 1 | 0.802 | 0.806 | -0.004 | -0,5 |
| 07.03.2022 | 09.05.2022 | Picea | 137 | *Phellinus viticola* | KH_phevit_D7 | dikaryon | 2 | 0.868 | 0.875 | -0.007 | -0,81 |
| 07.03.2022 | 09.05.2022 | Picea | 249 | *Phellinus viticola* | KH_phevit_D7 | dikaryon | 3 | 0.843 | 0.843 | 0 | 0 |
| 07.03.2022 | 09.05.2022 | Picea | 34 | *Phellinus viticola* | KH_phevit_D7 | dikaryon | 4 | 0.802 | 0.804 | -0.002 | -0,25 |
| 07.03.2022 | 09.05.2022 | Picea | 93 | *Phellinus viticola* | KH_phevit_D8 | dikaryon | 1 | 0.833 | 0.836 | -0.003 | -0,36 |
| 07.03.2022 | 09.05.2022 | Picea | 281 | *Phellinus viticola* | KH_phevit_D8 | dikaryon | 2 | 0.821 | 0.823 | -0.002 | -0,24 |
| 07.03.2022 | 09.05.2022 | Picea | 108 | *Phellinus viticola* | KH_phevit_D8 | dikaryon | 3 | 0.815 | 0.816 | -0.001 | -0,12 |
| 07.03.2022 | 09.05.2022 | Picea | 107 | *Phellinus viticola* | KH_phevit_D8 | dikaryon | 4 | 0.799 | 0.800 | -0.001 | -0,13 |
| 07.03.2022 | 09.05.2022 | Picea | 286 | *Phellinus viticola* | KH_phevit_D9 | dikaryon | 1 | 0.824 | 0.829 | -0.005 | -0,61 |
| 07.03.2022 | 09.05.2022 | Picea | 91 | *Phellinus viticola* | KH_phevit_D9 | dikaryon | 2 | 0.806 | 0.809 | -0.003 | -0,37 |
| 07.03.2022 | 09.05.2022 | Picea | 110 | *Phellinus viticola* | KH_phevit_D9 | dikaryon | 3 | 0.777 | 0.778 | -0.001 | -0,13 |
| 07.03.2022 | 09.05.2022 | Picea | 284 | *Phellinus viticola* | KH_phevit_D9 | dikaryon | 4 | 0.817 | 0.817 | 0 | 0 |
| 07.03.2022 | 09.05.2022 | Picea | 158 | *Phellinus viticola* | KH_phevit_D10 | dikaryon | 1 | 0.812 | 0.814 | -0.002 | -0,25 |
| 07.03.2022 | 09.05.2022 | Picea | 152 | *Phellinus viticola* | KH_phevit_D10 | dikaryon | 2 | 0.806 | 0.811 | -0.005 | -0,62 |
| 07.03.2022 | 09.05.2022 | Picea | 144 | *Phellinus viticola* | KH_phevit_D10 | dikaryon | 3 | 0.790 | 0.793 | -0.003 | -0,62 |
| 07.03.2022 | 09.05.2022 | Picea | 145 | *Phellinus viticola* | KH_phevit_D10 | dikaryon | 4 | 0.817 | 0.821 | -0.004 | -0,5 |

Table 12: all the data from the decomposition experiment for the species *Fomitopsis pinicola*. Each column describes start date, end date, type of substrate, block number, species, sample-ID, karyotype, replicates, weight before (g), weight after (g), weight loss (g) and weight loss (%).

| Date | Date end | Substrate | Block number | Species | Sample-ID | type | replicates | Weight before (g) | Weight after (g) | Loss (g) | Loss |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 07.03.2022 | 09.05.2022 | Picea | 100 | *Fomitopsis pinicola* | KH_fompin_M2 | monokaryon | 1 | 0.776 | 0.774 | 0.002 | 0,25 |
| 07.03.2022 | 09.05.2022 | Picea | 139 | *Fomitopsis pinicola* | KH_fompin_M2 | monokaryon | 2 | 0.801 | 0.800 | 0.001 | 0,12 |
| 07.03.2022 | 09.05.2022 | Picea | 78 | *Fomitopsis pinicola* | KH_fompin_M2 | monokaryon | 3 | 0.807 | 0.811 | -0.004 | -0,5 |
| 07.03.2022 | 09.05.2022 | Picea | 28 | *Fomitopsis pinicola* | KH_fompin_M2 | monokaryon | 4 | 0.828 | 0.828 | 0 | 0 |
| 07.03.2022 | 09.05.2022 | Picea | 143 | *Fomitopsis pinicola* | KH_fompin_M4 | monokaryon | 1 | 0.811 | 0.814 | -0.003 | -0,37 |
| 07.03.2022 | 09.05.2022 | Picea | 18 | *Fomitopsis pinicola* | KH_fompin_M4 | monokaryon | 2 | 0.799 | 0.800 | -0.001 | -0,13 |
| 07.03.2022 | 09.05.2022 | Picea | 92 | *Fomitopsis pinicola* | KH_fompin_M4 | monokaryon | 3 | 0.784 | 0.787 | -0.003 | -0,38 |
| 07.03.2022 | 09.05.2022 | Picea | 40 | *Fomitopsis pinicola* | KH_fompin_M4 | monokaryon | 4 | 0.811 | 0.811 | 0 | 0 |
| 07.03.2022 | 09.05.2022 | Picea | 241 | *Fomitopsis pinicola* | KH_fompin_M10 | monokaryon | 1 | 0.803 | 0.795 | 0.016 | 2 |
| 07.03.2022 | 09.05.2022 | Picea | 285 | *Fomitopsis pinicola* | KH_fompin_M10 | monokaryon | 2 | 0.802 | 0.766 | 0.037 | 4,6 |
| 07.03.2022 | 09.05.2022 | Picea | 245 | *Fomitopsis pinicola* | KH_fompin_M10 | monokaryon | 3 | 0.869 | 0.773 | 0.096 | 11 |
| 07.03.2022 | 09.05.2022 | Picea | 120 | *Fomitopsis pinicola* | KH_fompin_M10 | monokaryon | 4 | 0.825 | 0.821 | 0.004 | 0,5 |
| 07.03.2022 | 09.05.2022 | Picea | 22 | *Fomitopsis pinicola* | KH_fompin_D1 | dikaryon | 1 | 0.806 | 0.808 | -0.002 | -0,25 |
| 07.03.2022 | 09.05.2022 | Picea | 23 | *Fomitopsis pinicola* | KH_fompin_D1 | dikaryon | 2 | 0.810 | 0.810 | 0 | 0 |
| 07.03.2022 | 09.05.2022 | Picea | 13 | *Fomitopsis pinicola* | KH_fompin_D1 | dikaryon | 3 | 0.808 | 0.811 | -0.003 | -0,37 |
| 07.03.2022 | 09.05.2022 | Picea | 94 | *Fomitopsis pinicola* | KH_fompin_D1 | dikaryon | 4 | 0.807 | 0.808 | -0.001 | -0,12 |
| 07.03.2022 | 09.05.2022 | Picea | 89 | *Fomitopsis pinicola* | KH_fompin_D2 | dikaryon | 1 | 0.815 | 0.814 | 0.001 | 0,12 |
| 07.03.2022 | 09.05.2022 | Picea | 160 | *Fomitopsis pinicola* | KH_fompin_D2 | dikaryon | 2 | 0.801 | 0.803 | -0.002 | -0,25 |
| 07.03.2022 | 09.05.2022 | Picea | 76 | *Fomitopsis pinicola* | KH_fompin_D2 | dikaryon | 3 | 0.818 | 0.821 | -0.003 | -0,37 |
| 07.03.2022 | 09.05.2022 | Picea | 25 | *Fomitopsis pinicola* | KH_fompin_D2 | dikaryon | 4 | 1.107 | 1.099 | 0.008 | 0,72 |
| 07.03.2022 | 09.05.2022 | Picea | 96 | *Fomitopsis pinicola* | KH_fompin_D11 | dikaryon | 1 | 1.187 | 1.083 | 0.104 | 8,8 |
| 07.03.2022 | 09.05.2022 | Picea | 133 | *Fomitopsis pinicola* | KH_fompin_D11 | dikaryon | 2 | 0.809 | 0.813 | -0.004 | -0,49 |
| 07.03.2022 | 09.05.2022 | Picea | 246 | *Fomitopsis pinicola* | KH_fompin_D11 | dikaryon | 3 | 0.803 | 0.783 | 0.02 | 2,5 |
| 07.03.2022 | 09.05.2022 | Picea | 73 | *Fomitopsis pinicola* | KH_fompin_D11 | dikaryon | 4 | 0.800 | 0.804 | -0.004 | -0,5 |
| 07.03.2022 | 09.05.2022 | Picea | 4 | *Fomitopsis pinicola* | KH_fompin_D10 | dikaryon | 1 | 0.813 | 0.704 | 0.109 | 13,4 |
| 07.03.2022 | 09.05.2022 | Picea | 35 | *Fomitopsis pinicola* | KH_fompin_D10 | dikaryon | 2 | 0.822 | 0.675 | 0.147 | 17,9 |
| 07.03.2022 | 09.05.2022 | Picea | 85 | *Fomitopsis pinicola* | KH_fompin_D10 | dikaryon | 3 | 0.795 | 0.676 | 0.119 | 15 |
| 07.03.2022 | 09.05.2022 | Picea | 8 | *Fomitopsis pinicola* | KH_fompin_D10 | dikaryon | 4 | 0.795 | 0.683 | 0.112 | 14 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 07.03.2022 | 09.05.2022 | Picea | 5 | *Fomitopsis pinicola* | KH_fompin_D9 | dikaryon | 1 | 0.826 | 0.818 | 0.008 | 0,96 |
| 07.03.2022 | 09.05.2022 | Picea | 155 | *Fomitopsis pinicola* | KH_fompin_D9 | dikaryon | 2 | 0.828 | 0.828 | 0 | 0 |
| 07.03.2022 | 09.05.2022 | Picea | 75 | *Fomitopsis pinicola* | KH_fompin_D9 | dikaryon | 3 | 0.799 | 0.757 | 0.042 | 5,3 |
| 07.03.2022 | 09.05.2022 | Picea | 12 | *Fomitopsis pinicola* | KH_fompin_D9 | dikaryon | 4 | 0.870 | 0.793 | 0.077 | 8,9 |
| 07.03.2022 | 09.05.2022 | Picea | 33 | *Fomitopsis pinicola* | KH_fompin_D8 | dikaryon | 1 | 0.789 | 0.708 | 0.081 | 10,2 |
| 07.03.2022 | 09.05.2022 | Picea | 9 | *Fomitopsis pinicola* | KH_fompin_D8 | dikaryon | 2 | 0.797 | 0.788 | 0.009 | 1,13 |
| 07.03.2022 | 09.05.2022 | Picea | 132 | *Fomitopsis pinicola* | KH_fompin_D8 | dikaryon | 3 | 0.801 | 0.712 | 0.089 | 11,1 |
| 07.03.2022 | 09.05.2022 | Picea | 2 | *Fomitopsis pinicola* | KH_fompin_D8 | dikaryon | 4 | 0.805 | 0.742 | 0.063 | 7,8 |
| 07.03.2022 | 09.05.2022 | Picea | 109 | *Fomitopsis pinicola* | KH_fompin_D7 | dikaryon | 1 | 0.813 | 0.731 | 0.082 | 10,1 |
| 07.03.2022 | 09.05.2022 | Picea | 105 | *Fomitopsis pinicola* | KH_fompin_D7 | dikaryon | 2 | 0.802 | 0.805 | -0.003 | -0,37 |
| 07.03.2022 | 09.05.2022 | Picea | 283 | *Fomitopsis pinicola* | KH_fompin_D7 | dikaryon | 3 | 0.813 | 0.812 | 0.001 | 0,1 |
| 07.03.2022 | 09.05.2022 | Picea | 136 | *Fomitopsis pinicola* | KH_fompin_D7 | dikaryon | 4 | 0.806 | 0.809 | -0.003 | -0,37 |
| 07.03.2022 | 09.05.2022 | Picea | 134 | *Fomitopsis pinicola* | KH_fompin_D6 | dikaryon | 1 | 0.812 | 0.703 | 0.109 | 13,4 |
| 07.03.2022 | 09.05.2022 | Picea | 30 | *Fomitopsis pinicola* | KH_fompin_D6 | dikaryon | 2 | 0.791 | 0.692 | 0.099 | 12,5 |
| 07.03.2022 | 09.05.2022 | Picea | 119 | *Fomitopsis pinicola* | KH_fompin_D6 | dikaryon | 3 | 0.813 | 0.729 | 0.021 | 2,6 |
| 07.03.2022 | 09.05.2022 | Picea | 17 | *Fomitopsis pinicola* | KH_fompin_D6 | dikaryon | 4 | 0.823 | 0.731 | 0.092 | 11,2 |
| 07.03.2022 | 09.05.2022 | Picea | 97 | *Fomitopsis pinicola* | KH_fompin_D5 | dikaryon | 1 | 0.814 | 0.813 | 0.001 | 12,5 |
| 07.03.2022 | 09.05.2022 | Picea | 98 | *Fomitopsis pinicola* | KH_fompin_D5 | dikaryon | 2 | 0.820 | 0.820 | 0 | 0 |
| 07.03.2022 | 09.05.2022 | Picea | 159 | *Fomitopsis pinicola* | KH_fompin_D5 | dikaryon | 3 | 0.813 | 0.814 | -0.001 | -0,12 |
| 07.03.2022 | 09.05.2022 | Picea | 112 | *Fomitopsis pinicola* | KH_fompin_D5 | dikaryon | 4 | 0.848 | 0.850 | -0.002 | -0,24 |
| 07.03.2022 | 09.05.2022 | Picea | 39 | *Fomitopsis pinicola* | KH_fompin_D4 | dikaryon | 1 | 0.802 | 0.801 | 0.001 | 0,12 |
| 07.03.2022 | 09.05.2022 | Picea | 10 | *Fomitopsis pinicola* | KH_fompin_D4 | dikaryon | 2 | 0.826 | 0.831 | -0.005 | -0,6 |
| 07.03.2022 | 09.05.2022 | Picea | 150 | *Fomitopsis pinicola* | KH_fompin_D4 | dikaryon | 3 | 0.800 | 0.801 | -0.001 | -0,13 |
| 07.03.2022 | 09.05.2022 | Picea | 32 | *Fomitopsis pinicola* | KH_fompin_D4 | dikaryon | 4 | 0.807 | 0.810 | -0.003 | -0,37 |
| 07.03.2022 | 09.05.2022 | Picea | 24 | *Fomitopsis pinicola* | KH_fompin_D3 | dikaryon | 1 | 0.780 | 0.784 | -0.004 | -0,51 |
| 07.03.2022 | 09.05.2022 | Picea | 31 | *Fomitopsis pinicola* | KH_fompin_D3 | dikaryon | 2 | 0.800 | 0.804 | -0.004 | -0,5 |
| 07.03.2022 | 09.05.2022 | Picea | 242 | *Fomitopsis pinicola* | KH_fompin_D3 | dikaryon | 3 | 0.827 | 0.829 | -0.002 | -0,24 |
| 07.03.2022 | 09.05.2022 | Picea | 138 | *Fomitopsis pinicola* | KH_fompin_D3 | dikaryon | 4 | 0.814 | 0.820 | -0.006 | -0,74 |

Table 13: all the data from the growth experiment for the species *Meruliopsis taxicola*. Each column describes start date, end date, species, sample-ID, karyotype, replicates, measurement, and growth (mm).

| Date start | Date end | Species | Sample-ID | type | replicates | measurement | Growth(mm) |
|---|---|---|---|---|---|---|---|
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M10 | monokaryon | 1 | 1 | 49.09 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M10 | monokaryon | 2 | 1 | 47.72 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M10 | monokaryon | 3 | 1 | 51.40 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M10 | monokaryon | 4 | 1 | 47.47 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M13 | monokaryon | 1 | 1 | 63.89 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M13 | monokaryon | 2 | 1 | 65.68 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M13 | monokaryon | 3 | 1 | 64.23 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M13 | monokaryon | 4 | 1 | 60.47 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M14 | monokaryon | 1 | 1 | 54.99 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M14 | monokaryon | 2 | 1 | 52.61 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M14 | monokaryon | 3 | 1 | 57.33 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M14 | monokaryon | 4 | 1 | 55.26 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M15 | monokaryon | 1 | 1 | N/A |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M15 | monokaryon | 2 | 1 | N/A |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M15 | monokaryon | 3 | 1 | N/A |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M15 | monokaryon | 4 | 1 | N/A |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M16 | monokaryon | 1 | 1 | 55.33 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M16 | monokaryon | 2 | 1 | 54.69 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M16 | monokaryon | 3 | 1 | 56.97 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M16 | monokaryon | 4 | 1 | 56.68 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M17 | monokaryon | 1 | 1 | 54.39 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M17 | monokaryon | 2 | 1 | 55.99 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M17 | monokaryon | 3 | 1 | 54.17 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M17 | monokaryon | 4 | 1 | 53.93 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M18 | monokaryon | 1 | 1 | 41.23 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M18 | monokaryon | 2 | 1 | 39.59 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M18 | monokaryon | 3 | 1 | 40.32 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M18 | monokaryon | 4 | 1 | 40.44 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M19 | monokaryon | 1 | 1 | 47.05 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M19 | monokaryon | 2 | 1 | 49.96 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M19 | monokaryon | 3 | 1 | 48.60 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M19 | monokaryon | 4 | 1 | 50.73 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M21 | monokaryon | 1 | 1 | 49.86 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M21 | monokaryon | 2 | 1 | 46.67 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M21 | monokaryon | 3 | 1 | 47.88 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M21 | monokaryon | 4 | 1 | 46.28 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D10 | dikaryon | 1 | 1 | 53.30 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D10 | dikaryon | 2 | 1 | 48.70 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D10 | dikaryon | 3 | 1 | 50.56 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D10 | dikaryon | 4 | 1 | 56.68 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D13 | dikaryon | 1 | 1 | 59.05 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D13 | dikaryon | 2 | 1 | 59.82 |

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|---|---|---|---|---|---|---|---|
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D13 | dikaryon | 3 | 1 | 61.77 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D13 | dikaryon | 4 | 1 | 55.97 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D14 | dikaryon | 1 | 1 | 60.21 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D14 | dikaryon | 2 | 1 | 60.24 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D14 | dikaryon | 3 | 1 | 60.33 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D14 | dikaryon | 4 | 1 | 60.23 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D15 | dikaryon | 1 | 1 | 63.33 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D15 | dikaryon | 2 | 1 | 65.95 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D15 | dikaryon | 3 | 1 | 66.28 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D15 | dikaryon | 4 | 1 | 69.19 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D16 | dikaryon | 1 | 1 | 50.14 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D16 | dikaryon | 2 | 1 | 55.71 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D16 | dikaryon | 3 | 1 | 57.08 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D16 | dikaryon | 4 | 1 | 57.81 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D17 | dikaryon | 1 | 1 | 66.25 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D17 | dikaryon | 2 | 1 | 63.21 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D17 | dikaryon | 3 | 1 | 63.08 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D17 | dikaryon | 4 | 1 | 61.14 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D18 | dikaryon | 1 | 1 | 50.81 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D18 | dikaryon | 2 | 1 | 50.51 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D18 | dikaryon | 3 | 1 | 51.04 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D18 | dikaryon | 4 | 1 | 50.38 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D19 | dikaryon | 1 | 1 | 58.20 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D19 | dikaryon | 2 | 1 | 57.60 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D19 | dikaryon | 3 | 1 | 57.94 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D19 | dikaryon | 4 | 1 | 57.06 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D21 | dikaryon | 1 | 1 | 54.88 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D21 | dikaryon | 2 | 1 | 56.13 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D21 | dikaryon | 3 | 1 | 55.27 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D21 | dikaryon | 4 | 1 | 56.87 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M10 | monokaryon | 1 | 2 | 50.54 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M10 | monokaryon | 2 | 2 | 49.62 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M10 | monokaryon | 3 | 2 | 50.55 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M10 | monokaryon | 4 | 2 | 47.47 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M13 | monokaryon | 1 | 2 | 62.79 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M13 | monokaryon | 2 | 2 | 66.85 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M13 | monokaryon | 3 | 2 | 62.72 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M13 | monokaryon | 4 | 2 | 59.73 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M14 | monokaryon | 1 | 2 | 55.01 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M14 | monokaryon | 2 | 2 | 51.50 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M14 | monokaryon | 3 | 2 | 57.08 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M14 | monokaryon | 4 | 2 | 53.69 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M15 | monokaryon | 1 | 2 | N/A |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M15 | monokaryon | 2 | 2 | N/A |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M15 | monokaryon | 3 | 2 | N/A |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M15 | monokaryon | 4 | 2 | N/A |

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|---|---|---|---|---|---|---|---|
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M16 | monokaryon | 1 | 2 | 55.83 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M16 | monokaryon | 2 | 2 | 54.71 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M16 | monokaryon | 3 | 2 | 56.97 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M16 | monokaryon | 4 | 2 | 54.39 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M17 | monokaryon | 1 | 2 | 53.80 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M17 | monokaryon | 2 | 2 | 54.01 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M17 | monokaryon | 3 | 2 | 53.41 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M17 | monokaryon | 4 | 2 | 55.17 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M18 | monokaryon | 1 | 2 | 40.12 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M18 | monokaryon | 2 | 2 | 40.15 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M18 | monokaryon | 3 | 2 | 40.32 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M18 | monokaryon | 4 | 2 | 44.10 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M19 | monokaryon | 1 | 2 | 47.80 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M19 | monokaryon | 2 | 2 | 49.96 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M19 | monokaryon | 3 | 2 | 47.55 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M19 | monokaryon | 4 | 2 | 50.10 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M21 | monokaryon | 1 | 2 | 49.78 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M21 | monokaryon | 2 | 2 | 46.34 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M21 | monokaryon | 3 | 2 | 47.61 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_M21 | monokaryon | 4 | 2 | 48.68 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D10 | dikaryon | 1 | 2 | 53.23 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D10 | dikaryon | 2 | 2 | 48.70 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D10 | dikaryon | 3 | 2 | 49.93 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D10 | dikaryon | 4 | 2 | 48.02 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D13 | dikaryon | 1 | 2 | 57.85 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D13 | dikaryon | 2 | 2 | 59.11 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D13 | dikaryon | 3 | 2 | 60.40 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D13 | dikaryon | 4 | 2 | 59.43 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D14 | dikaryon | 1 | 2 | 59.57 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D14 | dikaryon | 2 | 2 | 59.87 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D14 | dikaryon | 3 | 2 | 58.80 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D14 | dikaryon | 4 | 2 | 58.26 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D15 | dikaryon | 1 | 2 | 63.92 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D15 | dikaryon | 2 | 2 | 66.61 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D15 | dikaryon | 3 | 2 | 66.89 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D15 | dikaryon | 4 | 2 | 68.39 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D16 | dikaryon | 1 | 2 | 53.14 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D16 | dikaryon | 2 | 2 | 56.78 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D16 | dikaryon | 3 | 2 | 58.37 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D16 | dikaryon | 4 | 2 | 56.62 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D17 | dikaryon | 1 | 2 | 65.61 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D17 | dikaryon | 2 | 2 | 64.92 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D17 | dikaryon | 3 | 2 | 64.58 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D17 | dikaryon | 4 | 2 | 60.55 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D18 | dikaryon | 1 | 2 | 53.59 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D18 | dikaryon | 2 | 2 | 51.10 |

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|---|---|---|---|---|---|---|---|
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D18 | dikaryon | 3 | 2 | 48.99 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D18 | dikaryon | 4 | 2 | 51.30 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D19 | dikaryon | 1 | 2 | 57.92 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D19 | dikaryon | 2 | 2 | 57.24 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D19 | dikaryon | 3 | 2 | 57.65 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D19 | dikaryon | 4 | 2 | 56.20 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D21 | dikaryon | 1 | 2 | 55.21 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D21 | dikaryon | 2 | 2 | 55.02 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D21 | dikaryon | 3 | 2 | 55.94 |
| 09.05.2022 | 18.05.2022 | *Meruliopsis taxicola* | KH_mertax_D21 | dikaryon | 4 | 2 | 56.94 |

Table 14: all the data from the growth experiment for the species *Meruliopsis taxicola*. Each column describes start date, end date, species, sample-ID, karyotype, replicates, measurement, and growth (mm).

| date start | date end | species | Sample-ID | type | replicates | Measurement | growth (mm) |
|---|---|---|---|---|---|---|---|
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_M6 | monokaryon | 1 | 1 | 47.39 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_M6 | monokaryon | 2 | 1 | 52.01 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_M6 | monokaryon | 3 | 1 | 51.58 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_M6 | monokaryon | 4 | 1 | 55.48 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_M9 | monokaryon | 1 | 1 | 31.45 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_M9 | monokaryon | 2 | 1 | 41.46 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_M9 | monokaryon | 3 | 1 | 39.67 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_M9 | monokaryon | 4 | 1 | 39.63 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D1 | dikaryon | 1 | 1 | 64.75 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D1 | dikaryon | 2 | 1 | 58.29 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D1 | dikaryon | 3 | 1 | 56.97 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D1 | dikaryon | 4 | 1 | 57.33 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D2 | dikaryon | 1 | 1 | 47.46 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D2 | dikaryon | 2 | 1 | 45.47 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D2 | dikaryon | 3 | 1 | 44.10 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D2 | dikaryon | 4 | 1 | 48.07 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D3 | dikaryon | 1 | 1 | 56.52 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D3 | dikaryon | 2 | 1 | 57.07 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D3 | dikaryon | 3 | 1 | 53.09 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D3 | dikaryon | 4 | 1 | 56.29 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D5 | dikaryon | 1 | 1 | 50.96 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D5 | dikaryon | 2 | 1 | 50.49 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D5 | dikaryon | 3 | 1 | 53.28 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D5 | dikaryon | 4 | 1 | 46.29 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D6 | dikaryon | 1 | 1 | 54.31 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D6 | dikaryon | 2 | 1 | 57.79 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D6 | dikaryon | 3 | 1 | 61.42 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D6 | dikaryon | 4 | 1 | 58.19 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D9 | dikaryon | 1 | 1 | 65.24 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D9 | dikaryon | 2 | 1 | 64.76 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D9 | dikaryon | 3 | 1 | 66.41 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D9 | dikaryon | 4 | 1 | 63.47 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_M6 | monokaryon | 1 | 2 | 50.38 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_M6 | monokaryon | 2 | 2 | 50.82 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_M6 | monokaryon | 3 | 2 | 49.69 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_M6 | monokaryon | 4 | 2 | 54.11 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_M9 | monokaryon | 1 | 2 | 27.49 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_M9 | monokaryon | 2 | 2 | 40.47 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_M9 | monokaryon | 3 | 2 | 41.10 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_M9 | monokaryon | 4 | 2 | 40.61 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D1 | dikaryon | 1 | 2 | 62.28 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D1 | dikaryon | 2 | 2 | 58.10 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D1 | dikaryon | 3 | 2 | 59.92 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D1 | dikaryon | 4 | 2 | 55.92 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D2 | dikaryon | 1 | 2 | 45.47 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D2 | dikaryon | 2 | 2 | 44.93 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D2 | dikaryon | 3 | 2 | 45.56 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D2 | dikaryon | 4 | 2 | 46.16 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D3 | dikaryon | 1 | 2 | 54.40 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D3 | dikaryon | 2 | 2 | 54.48 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D3 | dikaryon | 3 | 2 | 54.94 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D3 | dikaryon | 4 | 2 | 56.88 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D5 | dikaryon | 1 | 2 | 52.94 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D5 | dikaryon | 2 | 2 | 55.75 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D5 | dikaryon | 3 | 2 | 51.72 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D5 | dikaryon | 4 | 2 | 50.58 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D6 | dikaryon | 1 | 2 | 55.53 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D6 | dikaryon | 2 | 2 | 56.99 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D6 | dikaryon | 3 | 2 | 58.67 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D6 | dikaryon | 4 | 2 | 56.48 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D9 | dikaryon | 1 | 2 | 66.45 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D9 | dikaryon | 2 | 2 | 69.74 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D9 | dikaryon | 3 | 2 | 64.78 |
| 20.04.2022 | 05.05.2022 | *Phellopilus nigrolimitatus* | KH_phenig_D9 | dikaryon | 4 | 2 | 59.74 |

Table 15: all the data from the growth experiment for the species *Meruliopsis taxicola*. Each column describes start date, end date, species, sample-ID, karyotype, replicates, measurement, and growth (mm).

| Date start | date end | species | Sample-ID | type | Replicates | measurement | Growth(mm) |
|---|---|---|---|---|---|---|---|
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M3 | monokaryon | 1 | 1 | 55.96 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M3 | monokaryon | 2 | 1 | 60.68 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M3 | monokaryon | 3 | 1 | 56.62 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M3 | monokaryon | 4 | 1 | 59.39 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M4 | monokaryon | 1 | 1 | 49.09 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M4 | monokaryon | 2 | 1 | 56.99 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M4 | monokaryon | 3 | 1 | 55.51 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M4 | monokaryon | 4 | 1 | 56.43 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M8 | monokaryon | 1 | 1 | 52.93 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M8 | monokaryon | 2 | 1 | 48.79 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M8 | monokaryon | 3 | 1 | 46.14 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M8 | monokaryon | 4 | 1 | 44.32 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D1 | dikaryon | 1 | 1 | 43.02 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D1 | dikaryon | 2 | 1 | 43.19 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D1 | dikaryon | 3 | 1 | 40.68 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D1 | dikaryon | 4 | 1 | 40.06 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D2 | dikaryon | 1 | 1 | 41.78 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D2 | dikaryon | 2 | 1 | 42.20 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D2 | dikaryon | 3 | 1 | 39.78 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D2 | dikaryon | 4 | 1 | 41.32 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D3 | dikaryon | 1 | 1 | 51.71 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D3 | dikaryon | 2 | 1 | 49.56 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D3 | dikaryon | 3 | 1 | 49.90 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D3 | dikaryon | 4 | 1 | 50.94 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D4 | dikaryon | 1 | 1 | 47.86 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D4 | dikaryon | 2 | 1 | 48.71 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D4 | dikaryon | 3 | 1 | 49.07 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D4 | dikaryon | 4 | 1 | 44.59 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D5 | dikaryon | 1 | 1 | 54.45 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D5 | dikaryon | 2 | 1 | 52.81 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D5 | dikaryon | 3 | 1 | 56.63 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D5 | dikaryon | 4 | 1 | 61.07 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D6 | dikaryon | 1 | 1 | 45.68 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D6 | dikaryon | 2 | 1 | 47.62 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D6 | dikaryon | 3 | 1 | 47.53 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D6 | dikaryon | 4 | 1 | 47.17 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D7 | dikaryon | 1 | 1 | 59.42 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D7 | dikaryon | 2 | 1 | 48.53 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D7 | dikaryon | 3 | 1 | 58.11 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D7 | dikaryon | 4 | 1 | 56.60 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D8 | dikaryon | 1 | 1 | 47.08 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D8 | dikaryon | 2 | 1 | 45.94 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D8 | dikaryon | 3 | 1 | 43.89 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D8 | dikaryon | 4 | 1 | 47.16 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M3 | monokaryon | 1 | 2 | 53.59 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M3 | monokaryon | 2 | 2 | 62.33 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M3 | monokaryon | 3 | 2 | 65.29 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M3 | monokaryon | 4 | 2 | 59.23 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M4 | monokaryon | 1 | 2 | 50.17 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M4 | monokaryon | 2 | 2 | 57.36 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M4 | monokaryon | 3 | 2 | 53.61 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M4 | monokaryon | 4 | 2 | 56.59 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M8 | monokaryon | 1 | 2 | 52.42 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M8 | monokaryon | 2 | 2 | 46.54 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M8 | monokaryon | 3 | 2 | 53.37 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_M8 | monokaryon | 4 | 2 | 40.09 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D1 | dikaryon | 1 | 2 | 43.46 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D1 | dikaryon | 2 | 2 | 42.23 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D1 | dikaryon | 3 | 2 | 37.16 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D1 | dikaryon | 4 | 2 | 42.62 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D2 | dikaryon | 1 | 2 | 40.62 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D2 | dikaryon | 2 | 2 | 42.06 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D2 | dikaryon | 3 | 2 | 37.73 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D2 | dikaryon | 4 | 2 | 40.43 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D3 | dikaryon | 1 | 2 | 51.47 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D3 | dikaryon | 2 | 2 | 48.92 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D3 | dikaryon | 3 | 2 | 50.47 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D3 | dikaryon | 4 | 2 | 49.11 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D4 | dikaryon | 1 | 2 | 47.86 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D4 | dikaryon | 2 | 2 | 49.32 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D4 | dikaryon | 3 | 2 | 50.59 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D4 | dikaryon | 4 | 2 | 43.15 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D5 | dikaryon | 1 | 2 | 55.13 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D5 | dikaryon | 2 | 2 | 54.36 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D5 | dikaryon | 3 | 2 | 53.93 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D5 | dikaryon | 4 | 2 | 62.61 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D6 | dikaryon | 1 | 2 | 48.01 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D6 | dikaryon | 2 | 2 | 48.20 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D6 | dikaryon | 3 | 2 | 46.85 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D6 | dikaryon | 4 | 2 | 45.97 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D7 | dikaryon | 1 | 2 | 58.97 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D7 | dikaryon | 2 | 2 | 59.71 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D7 | dikaryon | 3 | 2 | 59.15 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D7 | dikaryon | 4 | 2 | 56.59 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D8 | dikaryon | 1 | 2 | 47.55 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D8 | dikaryon | 2 | 2 | 45.36 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D8 | dikaryon | 3 | 2 | 52.69 |
| 29.04.2022 | 10.05.2022 | *Gloeophyllum sepiarium* | KH_glosep_D8 | dikaryon | 4 | 2 | 48.02 |

Table 16: all the data from the growth experiment for the species *Fomitopsis pinicola*. Each column describes start date, end date, species, sample-ID, karyotype, replicates, measurement, and growth (mm).

| date start | date end | species | Sample-ID | type | replicates | measurement | growth (mm) |
|---|---|---|---|---|---|---|---|
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M2 | monokaryon | 1 | 1 | 56.98 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M2 | monokaryon | 2 | 1 | 57.31 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M2 | monokaryon | 3 | 1 | 57.33 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M2 | monokaryon | 4 | 1 | 57.05 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M4 | monokaryon | 1 | 1 | 37.65 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M4 | monokaryon | 2 | 1 | 40.99 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M4 | monokaryon | 3 | 1 | 35.08 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M4 | monokaryon | 4 | 1 | 37.05 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M10 | monokaryon | 1 | 1 | 49.77 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M10 | monokaryon | 2 | 1 | 49.40 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M10 | monokaryon | 3 | 1 | 54.07 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M10 | monokaryon | 4 | 1 | 53.94 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D1 | dikaryon | 1 | 1 | 54.43 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D1 | dikaryon | 2 | 1 | 54.21 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D1 | dikaryon | 3 | 1 | 58.15 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D1 | dikaryon | 4 | 1 | 48.97 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D2 | dikaryon | 1 | 1 | 57.49 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D2 | dikaryon | 2 | 1 | 57.84 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D2 | dikaryon | 3 | 1 | 53.55 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D2 | dikaryon | 4 | 1 | 54.13 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D3 | dikaryon | 1 | 1 | 64.36 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D3 | dikaryon | 2 | 1 | 50.17 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D3 | dikaryon | 3 | 1 | 56.96 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D3 | dikaryon | 4 | 1 | 49.63 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D4 | dikaryon | 1 | 1 | 49.63 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D4 | dikaryon | 2 | 1 | 48.96 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D4 | dikaryon | 3 | 1 | 50.52 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D4 | dikaryon | 4 | 1 | 50.80 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D5 | dikaryon | 1 | 1 | 44.68 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D5 | dikaryon | 2 | 1 | 39.46 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D5 | dikaryon | 3 | 1 | 0.83 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D5 | dikaryon | 4 | 1 | 42.02 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D6 | dikaryon | 1 | 1 | 62.32 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D6 | dikaryon | 2 | 1 | 66.20 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D6 | dikaryon | 3 | 1 | 64.05 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D6 | dikaryon | 4 | 1 | 65.08 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D7 | dikaryon | 1 | 1 | 53.83 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D7 | dikaryon | 2 | 1 | 51.76 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D7 | dikaryon | 3 | 1 | 54.26 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D7 | dikaryon | 4 | 1 | 51.10 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D8 | dikaryon | 1 | 1 | 51.36 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D8 | dikaryon | 2 | 1 | 44.65 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D8 | dikaryon | 3 | 1 | 53.56 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D8 | dikaryon | 4 | 1 | 50.84 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D9 | dikaryon | 1 | 1 | 59.06 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D9 | dikaryon | 2 | 1 | 58.56 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D9 | dikaryon | 3 | 1 | 60.22 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D9 | dikaryon | 4 | 1 | 60.71 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D10 | dikaryon | 1 | 1 | 59.62 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D10 | dikaryon | 2 | 1 | 60.04 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D10 | dikaryon | 3 | 1 | 59.81 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D10 | dikaryon | 4 | 1 | 58.93 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M2 | monokaryon | 1 | 2 | 57.23 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M2 | monokaryon | 2 | 2 | 57.90 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M2 | monokaryon | 3 | 2 | 58.30 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M2 | monokaryon | 4 | 2 | 55.91 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M4 | monokaryon | 1 | 2 | 42.06 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M4 | monokaryon | 2 | 2 | 42.91 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M4 | monokaryon | 3 | 2 | 39.37 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M4 | monokaryon | 4 | 2 | 36.62 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M10 | monokaryon | 1 | 2 | 51.39 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M10 | monokaryon | 2 | 2 | 47.42 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M10 | monokaryon | 3 | 2 | 53.03 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_M10 | monokaryon | 4 | 2 | 51.92 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D1 | dikaryon | 1 | 2 | 52.76 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D1 | dikaryon | 2 | 2 | 54.79 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D1 | dikaryon | 3 | 2 | 57.86 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D1 | dikaryon | 4 | 2 | 49.41 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D2 | dikaryon | 1 | 2 | 58.01 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D2 | dikaryon | 2 | 2 | 58.53 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D2 | dikaryon | 3 | 2 | 54.33 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D2 | dikaryon | 4 | 2 | 55.01 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D3 | dikaryon | 1 | 2 | 64.87 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D3 | dikaryon | 2 | 2 | 52.09 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D3 | dikaryon | 3 | 2 | 54.38 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D3 | dikaryon | 4 | 2 | 50.49 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D4 | dikaryon | 1 | 2 | 49.64 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D4 | dikaryon | 2 | 2 | 48.42 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D4 | dikaryon | 3 | 2 | 53.42 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D4 | dikaryon | 4 | 2 | 51.69 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D5 | dikaryon | 1 | 2 | 42.87 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D5 | dikaryon | 2 | 2 | 40.95 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D5 | dikaryon | 3 | 2 | 39.97 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D5 | dikaryon | 4 | 2 | 41.47 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D6 | dikaryon | 1 | 2 | 62.57 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D6 | dikaryon | 2 | 2 | 64.22 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D6 | dikaryon | 3 | 2 | 63.12 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D6 | dikaryon | 4 | 2 | 61.98 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D7 | dikaryon | 1 | 2 | 51.45 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D7 | dikaryon | 2 | 2 | 51.40 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D7 | dikaryon | 3 | 2 | 55.81 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D7 | dikaryon | 4 | 2 | 50.54 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D8 | dikaryon | 1 | 2 | 54.88 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D8 | dikaryon | 2 | 2 | 40.90 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D8 | dikaryon | 3 | 2 | 54.26 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D8 | dikaryon | 4 | 2 | 52.54 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D9 | dikaryon | 1 | 2 | 62.43 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D9 | dikaryon | 2 | 2 | 57.50 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D9 | dikaryon | 3 | 2 | 58.94 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D9 | dikaryon | 4 | 2 | 59.91 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D10 | dikaryon | 1 | 2 | 58.01 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D10 | dikaryon | 2 | 2 | 59.60 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D10 | dikaryon | 3 | 2 | 58.18 |
| 28.04.2022 | 06.05.2022 | *Fomitopsis pinicola* | KH_fompin_D10 | dikaryon | 4 | 2 | 57.85 |

Table 17: all the data from the growth experiment for the species *Trichaptum abietinum*. Each column describes start date, end date, species, sample-ID, karyotype, replicates, measurement, and growth (mm).

| Date start | Date end | Species | Sample-ID | type | replicates | measurement | Growth(mm) |
|---|---|---|---|---|---|---|---|
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D1 | dikaryon | 1 | 1 | 50.83 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D1 | dikaryon | 2 | 1 | 63.98 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D1 | dikaryon | 3 | 1 | 66.91 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D1 | dikaryon | 4 | 1 | 66.33 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D2 | dikaryon | 1 | 1 | 39.49 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D2 | dikaryon | 2 | 1 | 34.45 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D2 | dikaryon | 3 | 1 | 41.47 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D2 | dikaryon | 4 | 1 | 42.60 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D3 | dikaryon | 1 | 1 | 52.98 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D3 | dikaryon | 2 | 1 | 61.66 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D3 | dikaryon | 3 | 1 | 62.03 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D3 | dikaryon | 4 | 1 | 48.27 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D7 | dikaryon | 1 | 1 | 38.88 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D7 | dikaryon | 2 | 1 | 39.02 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D7 | dikaryon | 3 | 1 | 35.35 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D7 | dikaryon | 4 | 1 | 33.57 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D8 | dikaryon | 1 | 1 | 42.21 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D8 | dikaryon | 2 | 1 | 35.42 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D8 | dikaryon | 3 | 1 | 33.03 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D8 | dikaryon | 4 | 1 | 42.05 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D9 | dikaryon | 1 | 1 | 37.94 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D9 | dikaryon | 2 | 1 | 29.41 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D9 | dikaryon | 3 | 1 | 33.68 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D9 | dikaryon | 4 | 1 | 25.69 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D10 | dikaryon | 1 | 1 | 77.42 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D10 | dikaryon | 2 | 1 | 74.05 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D10 | dikaryon | 3 | 1 | 76.11 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D10 | dikaryon | 4 | 1 | 72.94 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M1 | monokaryon | 1 | 1 | 24.47 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M1 | monokaryon | 2 | 1 | 29.68 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M1 | monokaryon | 3 | 1 | 31.97 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M1 | monokaryon | 4 | 1 | 26.31 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M2 | monokaryon | 1 | 1 | 46.26 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M2 | monokaryon | 2 | 1 | 46.11 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M2 | monokaryon | 3 | 1 | 24.17 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M2 | monokaryon | 4 | 1 | 47.96 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M3 | monokaryon | 1 | 1 | 45.11 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M3 | monokaryon | 2 | 1 | 42.57 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M3 | monokaryon | 3 | 1 | 41.57 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M3 | monokaryon | 4 | 1 | 42.91 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M7 | monokaryon | 1 | 1 | 39.00 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M7 | monokaryon | 2 | 1 | 34.53 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M7 | monokaryon | 3 | 1 | 29.78 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M7 | monokaryon | 4 | 1 | 37.56 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M9 | monokaryon | 1 | 1 | 61.06 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M9 | monokaryon | 2 | 1 | 46.65 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M9 | monokaryon | 3 | 1 | 46.63 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M9 | monokaryon | 4 | 1 | 57.70 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D1 | dikaryon | 1 | 2 | 59.25 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D1 | dikaryon | 2 | 2 | 62.88 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D1 | dikaryon | 3 | 2 | 66.41 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D1 | dikaryon | 4 | 2 | 64.00 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D2 | dikaryon | 1 | 2 | 42.83 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D2 | dikaryon | 2 | 2 | 32.95 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D2 | dikaryon | 3 | 2 | 40.01 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D2 | dikaryon | 4 | 2 | 37.72 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D3 | dikaryon | 1 | 2 | 56.66 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D3 | dikaryon | 2 | 2 | 61.96 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D3 | dikaryon | 3 | 2 | 67.34 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D3 | dikaryon | 4 | 2 | 55.04 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D7 | dikaryon | 1 | 2 | 36.19 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D7 | dikaryon | 2 | 2 | 40.13 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D7 | dikaryon | 3 | 2 | 34.87 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D7 | dikaryon | 4 | 2 | 31.67 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D8 | dikaryon | 1 | 2 | 41.75 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D8 | dikaryon | 2 | 2 | 35.48 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D8 | dikaryon | 3 | 2 | 32.61 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D8 | dikaryon | 4 | 2 | 41.56 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D9 | dikaryon | 1 | 2 | 35.92 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D9 | dikaryon | 2 | 2 | 27.00 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D9 | dikaryon | 3 | 2 | 27.94 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D9 | dikaryon | 4 | 2 | 26.00 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D10 | dikaryon | 1 | 2 | 79.61 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D10 | dikaryon | 2 | 2 | 75.23 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D10 | dikaryon | 3 | 2 | 76.51 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_D10 | dikaryon | 4 | 2 | 73.94 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M1 | monokaryon | 1 | 2 | 25.24 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M1 | monokaryon | 2 | 2 | 29.17 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M1 | monokaryon | 3 | 2 | 31.69 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M1 | monokaryon | 4 | 2 | 27.93 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M2 | monokaryon | 1 | 2 | 45.53 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M2 | monokaryon | 2 | 2 | 45.45 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M2 | monokaryon | 3 | 2 | 26.84 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M2 | monokaryon | 4 | 2 | 45.08 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M3 | monokaryon | 1 | 2 | 44.40 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M3 | monokaryon | 2 | 2 | 41.37 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M3 | monokaryon | 3 | 2 | 42.09 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M3 | monokaryon | 4 | 2 | 42.87 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M7 | monokaryon | 1 | 2 | 36.06 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M7 | monokaryon | 2 | 2 | 36.38 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M7 | monokaryon | 3 | 2 | 30.17 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M7 | monokaryon | 4 | 2 | 38.12 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M9 | monokaryon | 1 | 2 | 62.10 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M9 | monokaryon | 2 | 2 | 48.60 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M9 | monokaryon | 3 | 2 | 43.28 |
| 24.05.2022 | 10.06.2022 | *Trichaptum abietinum* | KH_triabi_M9 | monokaryon | 4 | 2 | 60.70 |

Table 18: all the data from the growth experiment for the species *Phellinus viticola*. Each column describes start date, end date, species, sample-ID, growth (mm), measurement, replicates, and karyotype.

| Date start | Date end | Species | Sample-ID | Growth(mm) | measurement | replicates | type |
|---|---|---|---|---|---|---|---|
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M3 | 35.94 | 1 | 1 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M3 | 21.58 | 1 | 2 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M3 | 31.55 | 1 | 3 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M3 | 32.26 | 1 | 4 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M8 | 43.95 | 1 | 1 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M8 | 45.99 | 1 | 2 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M8 | 28.25 | 1 | 3 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M8 | 43.10 | 1 | 4 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M9 | 46.30 | 1 | 1 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M9 | 34.03 | 1 | 2 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M9 | 34.50 | 1 | 3 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M9 | 45.46 | 1 | 4 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D1 | 35.35 | 1 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D1 | 36.41 | 1 | 2 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D1 | 33.04 | 1 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D1 | 36.78 | 1 | 4 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D2 | 26.41 | 1 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D2 | 39.60 | 1 | 2 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D2 | 37.48 | 1 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D2 | 42.21 | 1 | 4 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D3 | 30.30 | 1 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D3 | 33.45 | 1 | 2 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D3 | 31.11 | 1 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D3 | 39.30 | 1 | 4 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D4 | 41.71 | 1 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D4 | 41.08 | 1 | 2 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D4 | 39.31 | 1 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D4 | 40.49 | 1 | 4 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D6 | 36.81 | 1 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D6 | 38.85 | 1 | 2 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D6 | 42.88 | 1 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D6 | 45.62 | 1 | 4 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D7 | 43.81 | 1 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D7 | 45.71 | 1 | 2 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D7 | 48.30 | 1 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D7 | 44.21 | 1 | 4 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D8 | 46.40 | 1 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D8 | 44.96 | 1 | 2 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D8 | 32.25 | 1 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D8 | 46.57 | 1 | 4 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D9 | 35.34 | 1 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D9 | 35.68 | 1 | 2 | dikaryon |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D9 | 41.40 | 1 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D9 | 34.24 | 1 | 4 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D10 | 34.61 | 1 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D10 | 31.94 | 1 | 2 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D10 | 31.35 | 1 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D10 | 34.29 | 1 | 4 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M3 | 34.09 | 2 | 1 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M3 | 26.19 | 2 | 2 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M3 | 30.69 | 2 | 3 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M3 | 31.76 | 2 | 4 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M8 | 44.01 | 2 | 1 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M8 | 46.55 | 2 | 2 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M8 | 26.68 | 2 | 3 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M8 | 42.39 | 2 | 4 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M9 | 45.60 | 2 | 1 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M9 | 33.70 | 2 | 2 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M9 | 31.18 | 2 | 3 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_M9 | 48.39 | 2 | 4 | monokaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D1 | 33.94 | 2 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D1 | 35.64 | 2 | 2 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D1 | 34.33 | 2 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D1 | 36.15 | 2 | 4 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D2 | 24.84 | 2 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D2 | 39.05 | 2 | 2 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D2 | 37.34 | 2 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D2 | 44.20 | 2 | 4 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D3 | 30.48 | 2 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D3 | 37.00 | 2 | 2 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D3 | 30.63 | 2 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D3 | 42.78 | 2 | 4 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D4 | 42.09 | 2 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D4 | 39.14 | 2 | 2 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D4 | 38.67 | 2 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D4 | 39.75 | 2 | 4 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D6 | 36.98 | 2 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D6 | 39.73 | 2 | 2 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D6 | 43.83 | 2 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D6 | 42.84 | 2 | 4 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D7 | 45.59 | 2 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D7 | 44.04 | 2 | 2 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D7 | 48.36 | 2 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D7 | 44.05 | 2 | 4 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D8 | 47.53 | 2 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D8 | 45.67 | 2 | 2 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D8 | 34.77 | 2 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D8 | 46.36 | 2 | 4 | dikaryon |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D9 | 34.49 | | 2 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D9 | 36.61 | | 2 | 2 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D9 | 40.92 | | 2 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D9 | 33.41 | | 2 | 4 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D10 | 33.90 | | 2 | 1 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D10 | 31.49 | | 2 | 2 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D10 | 31.88 | | 2 | 3 | dikaryon |
| 11.04.2022 | 20.05.2022 | *Phellinus viticola* | KH_phevit_D10 | 33.28 | | 2 | 4 | dikaryon |