

## The Icelandic varieties of *Salix phylicifolia*: Brekkuvíðir and Tunguvíðir

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Brekkuvíðir is considered being a naturally occurring hybrid between *Salix phylicifolia* L. (Gulvíðir) and *Salix lanata* L. (Loðvíðir). Brekkuvíðir is a popular cultivar for garden planting especially in hedgerows, due to its beautiful leaves, tightly arranged twigs and fast growing. The cultivar is known to be hardy in the windy and cold conditions. Tunguvíðir is also believed to be the same hybrid as it is morphologically similar to Brekkuvíðir, except that Brekkuvíðir is female whereas Tunguvíðir is a male plant. They are thought to have originated in different parts of the country. We have used molecular and cytogenetic approaches to try to identify these two types of *Salix*, and to get better insights into the evolutionary history of these plants and the genetic relationships with the botanically known native species. The cytogenetic results have shown clearly that both Brekkuvíðir and Tunguvíðir are hexaploid having the same chromosome number as Gulvíðir, whereas Loðvíðir is diploid. Any hybrids between these two *Salix* species would have to be tetraploid, and therefore the long-known speculation that Brekkuvíðir and Tunguvíðir being hybrid between Guðvíðir and Loðvíðir is hereby rejected. The mapping of the major ribosomal genes on chromosomes of these plants further supports the ploidy results. The genetic distance analysis, based on ISSR (Inter-Simple Sequence Repeats), RAPD (Random Amplified Polymorphic DNA) and rDNA-RFLP (Restriction Fragment Length Polymorphism of the major ribosomal genes), has placed Brekkuvíðir and Tunguvíðir within the Gulvíðir cluster, meaning that all three types belong to the hexaploid species *Salix phylicifolia*. Brekkuvíðir and Tunguvíðir may have originated *de novo* from Gulvíðir at different places in the past. Brekkuvíðir is molecularly polymorphic, but Tunguvíðir may have come from a single clone.