

Climate-adapted tree species selection ~ Drought stress risk & mixed stands ~

The choice of tree species is the most important decision in forestry operations, with long-term ramifications. It determines, the duration of the production period ...

- the **cost and yield**
- the **landscape**
- the **ecosystem and nature conservation services**
- the **production risks**

The **risk of drought stress** due to extended vegetation periods and increased evaporation rates will lead to **reduced productivity** and **increased susceptibility** to **abiotic** and **biotic stress factors** in most **Central European tree species**.

Tree species **drought stress risk** is classified via **site water balance (SWB)*** threshold values in the NW-FVA research approach.

Drought stress risk	Spruce	Beech	Oak Douglas fir	Scots pine
low	> 0 mm	> -50 mm	> -150 mm	> -200 mm
medium	0 – -80 mm	-50 – -100 mm	-150 – -350 mm	-200 – -450 mm
high	< -80 mm	< -100 mm	< -350 mm	< -450 mm

– Black alder
– Downy birch

– Silver fir
– Jap. larch
– Witch elm
– Black Walnut

– Red oak
– Maple
– Ash
– Hornbeam
– Lime tree
– Europ. larch
– Grand fir

– Silver birch
– Black pine

*The site water balance corresponds to the climatic water balance (CWB; difference between precipitation and potential evaporation) plus the plant-available water in the soil (nFK)

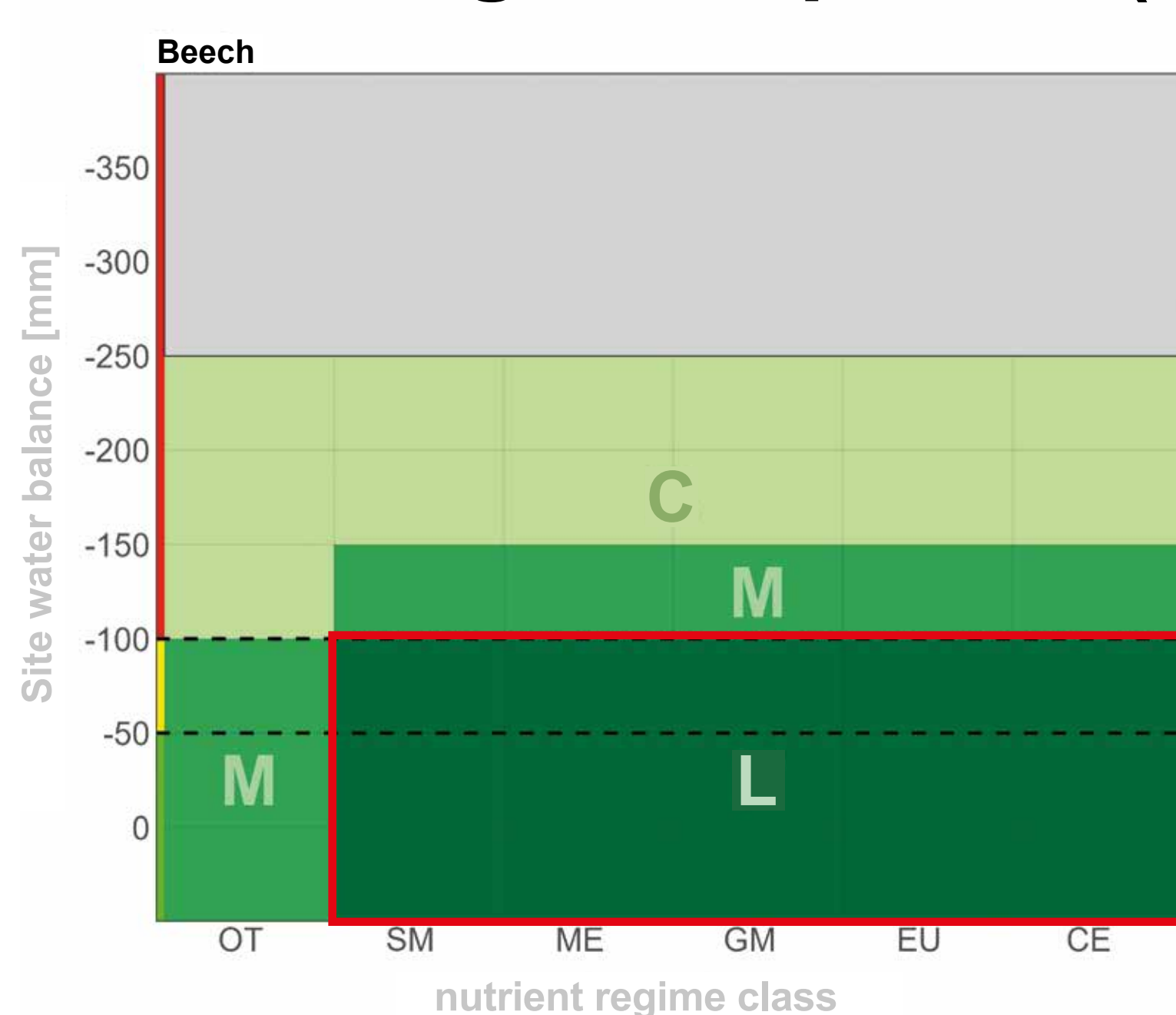
Planning corridors for tree species based on climate-sensitive drought stress risk and trophic level. This defines the role of a tree species in the mixed stand:

Leading tree species (L), mixed tree species (M), companion tree species (C), excluded

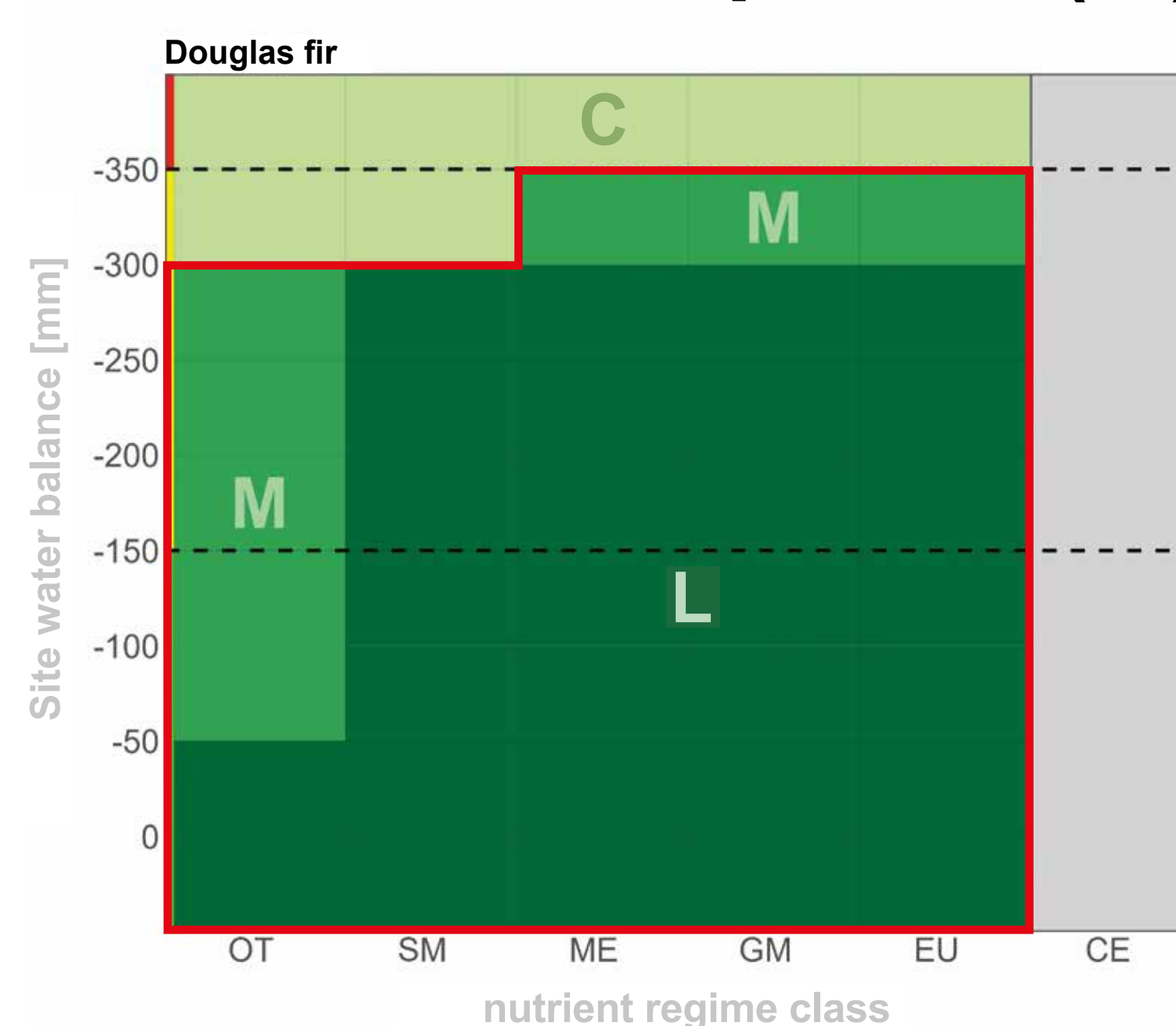
Example: Forest development type (FDT 26 “Beech-Douglas fir”)

Ranking	Tree species	Regeneration target	Development target
Leading tree species (L)	Beech	40 – 60 %	50 – 70 %
Mixed tree species (M)	Douglas fir	30 – 40 %	20 – 40 %
Companion tree species (C)		10 – 20 %	10 %

Leading tree species (L)



Mixed tree species (M)



Forest Development types (FDT)

