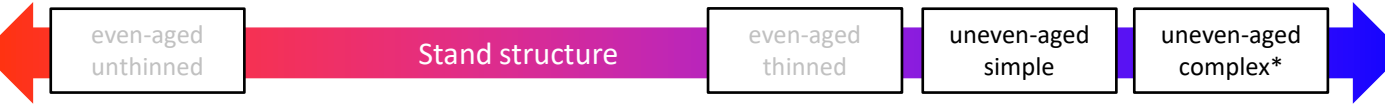
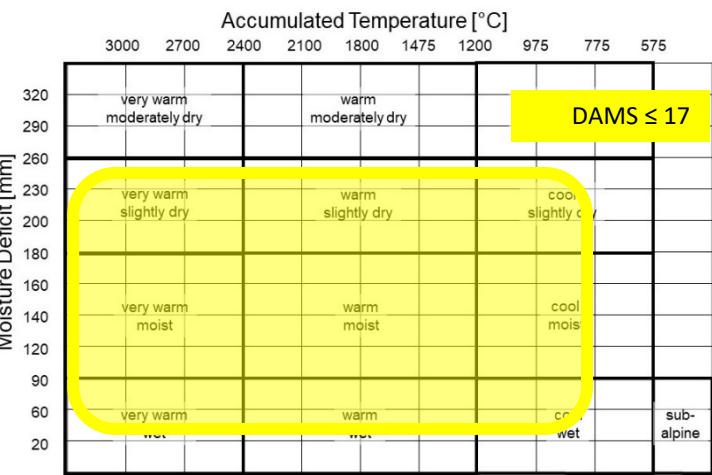


**1. Structure and dynamics:**  
Multiple storeyed stand of BE with admixed XCST such as NS, SF, DF and others. Mixture may range from individual trees to small areas. Supplemented by minor species of category A such as OK, SY, ROW, BI, ASP and others according to site conditions.  
Species distribution: BE 50 – 70%                      XCST 30 – 50%                      minor species: 10 – 30%  
The complex stand structure requires small scale interventions under a CCF regime, with widespread use of natural regeneration for all species involved.



**2. Ecological suitability:**  
Represents no current NVC type but contains important components of W14, W15 and provides niches for elements of W9, W10 and W11. This FDT belongs on well aerated, deep soils of loamy texture and at least medium nutrient supply. Self-sustaining through continuous forest cover.



		Soil Nutrient Regime					
		VP	P	M	R	VR	C
Soil Moisture Regime	VD	Rankers and shingle					Rendzinas
	MD	Gravelly or sandy podzols and ironpan soils	Gravelly or sandy brown earths	Loamy brown earths of high base status		Calcareous brown earths	
	SD						
	F	Loamy podzols and ironpan soils	Loamy brown earths	Loamy brown earths of high base status		Calcareous brown earths	
	M						
	VM	Podzolic gleys and peaty ironpan soils	Brown gleys	Brown gleys of high base status		Calcareous brown earths	
	W		Surface-water gleys	Surface-water gleys of high base status	Calcareous surface-water gleys		
	VW	Unflushed peaty gleys and deep peats	Flushed peaty gleys and deep peats	Humic gleys of high base status and fen peats			

**3. Management objectives:**  
Economic (BE GYC < 10): BE – sawlogs, target DBH > 50cm in 100 – 160yrs, optional (grey squirrels)  
XCST – sawlogs, target DBH > 50cm in 80 – 140yrs  
Environmental and social: Complex forest structure provides habitats for a range of species and lends itself to low-impact management. Structural and species diversity improve stability with regard to risk factors. Attractive to visitors because of its diverse structure, broadleaved component and autumn colours.

#### 4. General management principles for the FDT

Most XCST species are compatible (CS = 2) to grow in mixture with BE; those which considerably exceed BE in final height (e.g. DF, WH) are slightly less so (CS = 3) and greater attention must therefore be paid to mixture design and species proportions. Management of young stands must aim to develop timber quality in BE, and individual tree stability in XCST. Stands originating from dense natural regeneration will require respacing in order to steer species composition and develop good timber quality and tree stability. Careful selection of BE FC trees is essential, as is the early removal of wolf trees. Due to the high crown plasticity a clumped occurrence of BE FC trees is more acceptable than in other species. All species will respond well to thinning throughout their lifetime. Whilst thinning in BE should commence when FC trees have achieved the desired length of clean bole (usually at around 16 – 18m top height) XCST need earlier interventions in order to maintain tree stability. Crown thinning should be used throughout. LIMA / CCF methods are the preferable option for final harvesting / restocking on sites conducive to natural regeneration, leading to a complex structure in most cases.

#### 5. Timeline

stage	H <sub>100</sub> [m]	intervention
Establishment		<ul style="list-style-type: none"> <li>BE: Natural regeneration in densities of &gt; 10000 seedlings/ha or planting of 6000 – 10000 trees/ha. Numbers can be reduced by planting 20 – 30 individual BE per cluster (0.3 – 1m spacing), with the number of clusters corresponding to the envisaged number of FC trees.</li> <li>XCST: Natural regeneration or planting of &lt; 3000 trees/ha.</li> </ul>
Young stand	< 3	<ul style="list-style-type: none"> <li>Protection against animals / plants as necessary.</li> <li>XCST: Systematic respacing if N &gt; 3000 trees/ha at 1 – 2m tree height.</li> <li>Clearing of any damage caused by felling / extraction of overstorey trees.</li> <li>Regulation of species composition and minor species as required.</li> </ul>
Thicket stage	6 – 10	<ul style="list-style-type: none"> <li>BE: Negative selective respacing – removal of wolf and other undesirable trees. Maintain closed canopy to facilitate self-pruning.</li> </ul>
Pole stage	10 – 14	<ul style="list-style-type: none"> <li>BE: Continue negative respacing if necessary, otherwise shift focus to positive selection – carefully promote up to 250 FC tree candidates/ha by removing 1 – 2 competitor(s). Maintain closed canopy for ongoing self-pruning and differentiation process.</li> <li>XCST: First selective crown thinning, mainly removing dominant / co-dominant trees with visible defects, coarse branching or poor shape.</li> </ul>
Pole to small timber stage	16 – 18	<ul style="list-style-type: none"> <li>BE: Thinning interventions start when the majority of FC tree candidates have reached the desired length of clean bole.</li> <li>Select 100 – 200 FC trees/ha (BE + XCST), and continue crown thinning at height growth intervals of 3m. Focus on competition status of FC trees and maintain target species composition. A clumped occurrence of FC trees is acceptable for BE, but not for XCST.</li> </ul>
Timber stage		<ul style="list-style-type: none"> <li>Monitor the development of FC trees and continue thinning to keep them free from competition. Live crown length should be &gt; 50% of tree height.</li> <li>Plan for final harvesting when FC trees approach target DBH.</li> <li>Decide on LIMA / CCF method (simple or complex) to be used and assess potential for natural regeneration – improve conditions if necessary.</li> </ul>
Final harvesting and regeneration stage		<ul style="list-style-type: none"> <li>Carry out harvesting operations according to agreed LIMA / CCF method.</li> <li>Monitor light level, ground vegetation, occurrence and growth rate of regeneration, supplement by planting if necessary.</li> </ul>