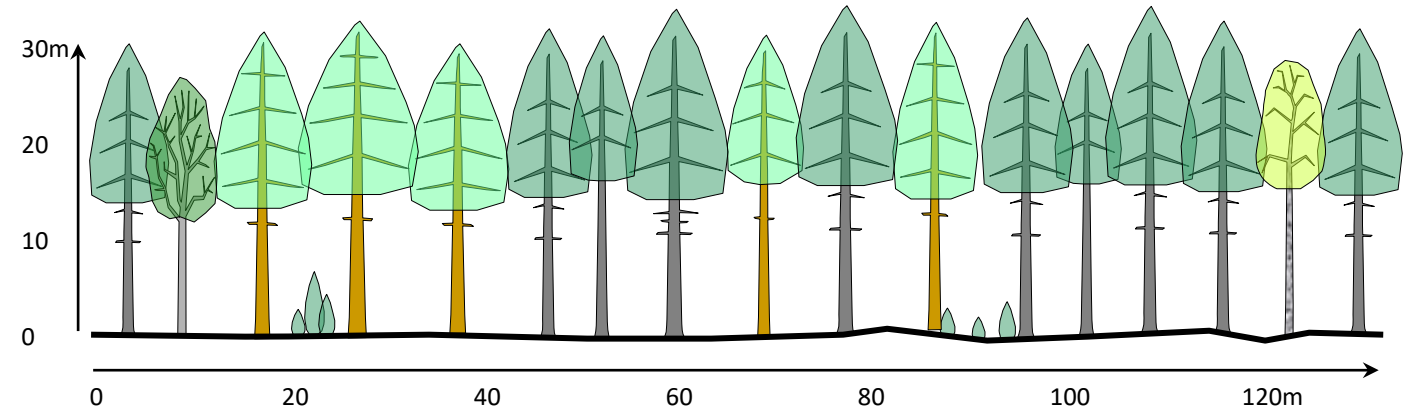
FDT 1.1.4 SS and light demanding conifers (XCLD)

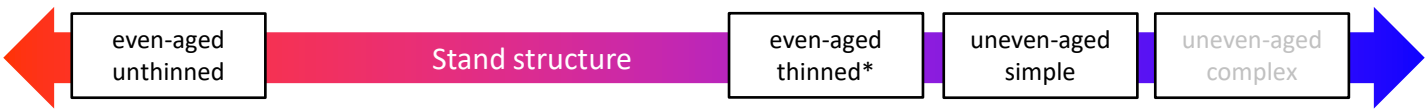


1. Structure and dynamics:

Mixed stands of SS with XCLD (larches or pines), often established as a nursing mixture. Stands are usually even-aged and single storied but may develop into a complex structure if managed accordingly. Species may be mixed intimately, in groups, or in patches. Supplemented by minor species of category A.

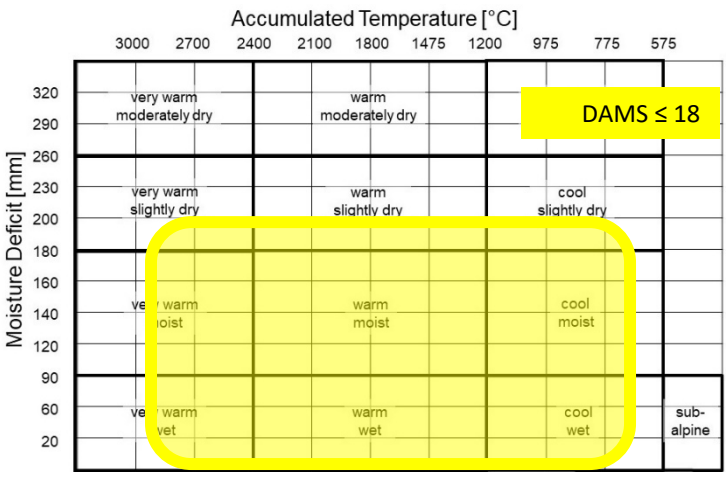
Species distribution: SS 60 – 80% XCLD 20 – 40% minor species: < 10%

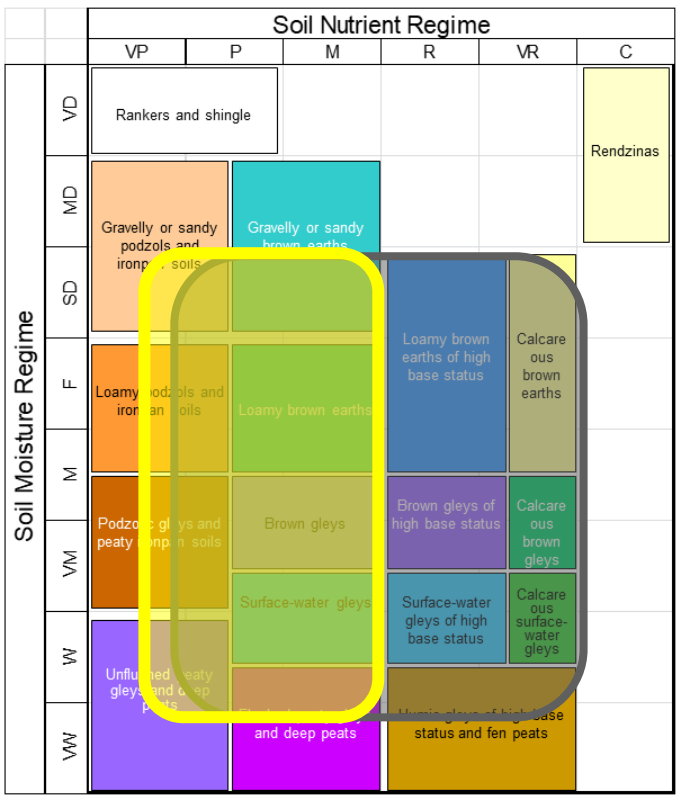
Management is likely to be by clearfelling and restocking, or by LIMA / CCF, making use of natural regeneration wherever practical.



2. Ecological suitability:

Represents no NVC type but provides niches for elements of W18, W17, W11 and W4. The choice of XCLD species must reflect soil conditions – SP on poorer and drier soils, LP on wet ground and larches on the most fertile sites.





3. Management objectives:

Economic: SS – sawlogs / pulp / chip in 40 – 60yrs
XCLD – sawlogs / pulp / chip in 40 – 80yrs

Environmental and social: Mixed forest structure provides more diverse habitats for a range of species, higher landscape and amenity value, improves soil quality and stability with regard to risk factors over pure SS stands. Option for CCF where exposure of forest soil by clearfelling is undesirable.

4. General management principles for the FDT

This FDT may be difficult to perpetuate because of the compatibility of the species, more so for SP and LP (CS = 4) than JL or HL (CS = 2). Management of young stands must aim to develop vigour and stability of individual trees. Stands originating from dense natural regeneration are likely to require respacing in order to steer species composition and develop good tree stability. Whereas SS responds well to thinning throughout its lifetime the response of XCLD will fade over time and efforts to induce diameter growth must therefore focus on early interventions. These stands will often have been established as self-thinning mixtures – a no thinning approach is therefore possible but will limit management options and achievable target DBH. Thinning regimes should generally start at around 10 – 12m top height and use crown thinning as long as necessary to develop good individual tree quality and stability. XCLD must be promoted over SS in order to ensure their position in the canopy. XCLD may be managed on a longer rotation than SS, stability permitting. In that case a two-storey CCF structure may develop, otherwise restocking after clearfell is envisaged. In general, natural regeneration of XCLD will be more difficult to achieve than of SS, so supplementary planting may be required and this will need to be secured if SS regeneration is dense.

5. Timeline

stage	H_{100} [m]	Intervention
Establishment		• Planting of 2000 – 3000 trees/ha or natural regeneration. • XCLD may be planted as nurse, in rows or alternating with SS.
Young stand	< 3	• Protection against animals / plants as necessary. • Respacing if N > 3000 trees/ha at 1 – 2m tree height. Reduce N to 1500 – 2500 trees/ha; in areas of difficult access, along exposed edges and on sites of high wind damage risk reduce N to 800 – 1000 trees/ha. • Clearing of any damage caused by felling / extraction of overstorey trees. • Steering of SS / XCLD proportion in natural regeneration, promotion of minor species as required. XCLD proportion in natural regeneration should be at least 10% higher than final target.
Thicket stage	3 – 10	• Generally no interventions, except for: • Release 300 – 400 FC tree candidates/ha in areas of difficult access or high wind hazard if respacing in the previous stage has been missed.
Pole stage	10 – 12	• First selective thinning (crown thinning), mainly removing dominant / co-dominant trees with visible defects, coarse branching or poor shape. Promote XCLD over SS. • Selection of 150 – 250 FC trees/ha (SS + XCLD).
Pole to small timber stage	12 – 20	• Continue crown thinning at height growth intervals of 3m, favouring XCLD. • Focus on competition status of FC trees and maintain target species composition.
Timber stage		• Monitor species composition, stand density, stability and health, and thin accordingly. Apply crown thinning as long as necessary for the benefits of FC trees, otherwise thinning type may gradually change to low. • Plan for final harvesting when FC trees approach target DBH. • Assess potential for natural regeneration and consider LIMA / CCF options.
Final harvesting and regeneration stage		• Carry out harvesting / restocking operations according to agreed method. • If XCLD is managed on a longer rotation than SS monitor seedbed conditions, occurrence and growth rate of regeneration. Supplement by planting and review FDT if difficult to sustain XCLD.