Current Site-specific management guidelines and schedules for the 9 PROFOUND forest sites of the regional forest sector in ISIMIP

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Table 1: Current, site-specific forest management rules at the 9 forest sites part of the regional forest sector from the PROFOUND database (Reyer et al. 2020, https://doi.org/10.5194/essd-12-1295-2020). NR = Natural regeneration; DBH = Diameter at breast height (=1.30m), BA = Basal Area, fasy = Fagus sylvatica, piab = Picea abies, abal = Abies alba, pisy = Pinus sylvestris, pipi = Pinus pinaster.

	Silvicultural system (***sysi***)	**Species** (***species***)	**Harvest type (stem or branches)** (***harvtype***)	**Thinning type** (***thintype***)	**Intensity [% of BA]** (***thinint***)	**Rotation length [years]** (***rotlenght***)	**Thinning frequency [year of intervention]** (***thinfrequ***)	**Regeneration species** (***regen***)	**Planting density** (***plantdens***)	**Planting age [years]** (***plantage***)	**Planting seedling height [m]** (***planthei***)	**Planting DBH [cm]** (***plantdbh***)	**Age when DBH is reached [years]** (***dbhage***)	**Remarks**
Bily-Kriz	even-aged clearcut	piab	stem	below, below, below, below, below, below, below	50, 20, 15, 10, 10, 30, 40	110	15, 25, 35, 45, 60, 95, 105	piab + NR of fasy & abal (about 5%)	4000/ha piab + 1000/ha fasy + 500/ ha abal to mimic NR	4	0.3	na	8	fasy and abal are "allowed" in NR but not managed, only sanitary removal of dead trees, the final cut is split into two (at age 105 and age 110)
Collelongo	shelterwood (start regenerating at age 105)	fasy	stem	below, below, below, below, above	35, 25, 25, 25, 35	120	15, 35, 60, 85, 105	fasy	NR 9000 (8000-10000)	1	0.1	0.1	5	the first thinning is precommercial, the planting data is only a rough approximation, usually NR is the regeneration method.

Hyytiälä	even-aged clearcut	pisy	stem	below, below, above	20, 20, 20	90	20, 50, 70	pisy	2000	2	0.25 (0.2-0.3)	na	7 (5-7)	regenerate as pure pisy stand
Kroof (beech)	target DBH mimicked through rotation length	fasy	stem	above, above, above, above, above, above, above, above, above, above	15, 15, 15, 15, 15, 15, 15, 15, 15, 15	120	20, 30, 40, 50, 60, 70, 80, 90, 100, 110	NR; fasy	4000 after 10 years (2500-5000)	2	0.6 (0.5-0.7)	na	7	the planting density is a 2-species-stand (fasy,piab), planting density for a single stand should be doubled
Kroof (spruce)	target DBH mimicked through rotation length	piab	stem	above, above, above, above, above, above, above, above, above, above	12.5, 12.5, 12.5, 12.5, 12.5, 12.5, 12.5, 12.5, 12.5, 12.5	90	10, 25, 30, 35, 40, 45, 55, 65, 75	piab	1500 (1000-2000)	2	0.35 (0.3-0.4)	na	5	the planting density is for single-species stands, hence when regenerating the stand as a 2-species-stand (fasy, piab), the planting density of each species should be halved, planting is delayed until beech is also planted
Le-bray	even-aged clearcut	pipi	stem	below, below, below, below	20, 20, 20, 20	45	10, 20, 30, 40	pipi	2500	1	0.1	na	7	this is to mimic the change in managed from sowing to planting, timing of thinnings and final cut is mimicking a target-oriented harvesting schedule.
Peitz	even-aged clearcut	pisy	stem	below, below, above	10, 20, 20	120	55, 75, 95	pisy	9000	2	0.175 (0.1-0.25)	na	5	regenerate as pure pisy stand

Solling-beech	even-aged clearcut	fasy	stem	above, above, above, above, above, above, above, above, above, below, below	20, 20, 20, 20, 20, 20, 20, 20, 20, 20,	120	5, 10, 15, 20, 25, 30, 35, 50, 65, 80, 95, 110	fasy	8500 (7000-10000)	2	0.3 (0.2-0.4)	na	4	
Solling-spruce	even-aged clearcut	piab	stem	above, above, above, above, above, above, above, above, above, below, below	15, 15, 15, 15, 15, 15, 15, 15, 15, 15,	120	5, 10, 15, 20, 25, 30, 35, 50, 65, 80, 95, 110	piab	3000 (2500-3500)	2	0.35 (0.25-0.5)	0.6	3	
Soro	sheltercut with NR	fasy	stem	below, below, below, below, below, below, below, below, below, above, above, above, above	20, 20, 20, 20, 20, 10, 10, 10, 10, 10, 10, 10, 10	140 (keep a few shelter trees until age 160, if possible)	15, 20, 25, 30, 35, 45, 50, 60, 70, 80, 90, 105, 120	fasy	6000 from NR	2	0.4	na	7	at age 70 move to Future crop tree management, models could simulate as thinning from above because all trees have similar size anyway, overall this is a strategy to manage for high quality timber (veneer)

Table 2: Detailed management schedule for current site-specific forest management at the 9 forest sites part of the regional forest sector specifying the year of management intervention and the type of management intervention. The first available data point is used for model initialization (Ini). Following data points are used to mimic historic management (HM). When no more observed data is available, the future management rules need to be used (FM). The transition from historical management to future managements start in 2020. E.g., Bily Kriz is 34 years old in 2015, hence theoretically in 2016 at age 35 the first thinning from the new management should start (15% BA under current site-specific management guidelines). Yet, because this is before 2020, it is not included but only the next thinning in 2026 at age 45 (10% BA under current site-specific management guidelines is modelled). When harvesting and planting are scheduled in the same year, i.e., in a sheltercut system, the new stand age starts counting from theccplanting year. In the subsequent management intervention, usually, the harvesting then takes place and refers to trees still present from the old rotation. The thinning intensity then refers to the trees of the new rotation. Note that depending on how models represent planting/regeneration, the overall plant-age maybe slightly higher than the stand age (e.g. seedlings planted with an age of 2 in 2033 will be harvested at an age of 142 after 140 years of rotation in 2173). TBXX=XX% of basal area removed as thinning from below, TAXX = XX% of basal area removed as thinning from above, H= Harvest, P=Planting.

Name	Ini	HM	FM1	FM2	FM3	FM4	FM5	FM6	FM7	FM8	FM9	FM10	FM11	FM12	FM13	FM14	FM15	FM16	FM17	FM18	FM19	FM20	FM21	Remarks
	1997	1998-2015	2026	2041	2076	2086	2091	2092	2107	2117	2127	2137	2152	2187	2197	2202	2203	...	2313					
Bily-Kriz		TB	TB10	TB10	TB30	TB40	H	P	TB50	TB20	TB15	TB10	TB10	TB30	TB40	H	P	...	H					
	1992	1997-2012	2020	2021	2036	2056	2081	2106	2126	2141	2161	2186	2211	2231	2246	2266	2286							
Collelongo		TA	H	P	TB35	TB25	TB25	TB25	TA35, P	H, TB35	TB25	TB25	TB25	TA35, P	H, TB35	TB35	TB25							
	1995	1996-2011	2031	2051	2052	2072	2102	2122	2142	2143	2163	2193	2213	2233	2234	2254	2284	2304						
Hyytiälä		TB	TA20	H	P	TB20	TB20	TA20	H	P	TB20	TB20	TA20	H	P	TB20	TB20	TA20						
		1999-2010	2023	2033	2043	2053	2063	2064	2084	2094	2104	2114	2124	2134	2144	2154	2164	2174	2184	2185	...	2295		Beech part of stand
		TB	TA15	TA15	TA15	TA15	H	P	TA15	TA15	TA15	TA15	TA15	TA15	TA15	TA15	TA15	TA15	H	P	...	TA15		
		1999-2010	2025	2040	2064	2074	2089	2094	2099	2104	2109	2119	2129	2139	2154	2185	…	2275						Spruce part of stand
Kroof (beech + spruce)	1997	TB	TA12.5	H	P*	TA12.5	TA12.5	TA12.5	TA12.5	TA12.5	TA12.5	TA12.5	TA12.5	TA12.5	H	P*	...	H						

	1986	1987-2009	2020	2021	2031	2041	2051	2061	2066	2067	2077	2087	2097	2107	2112	2113	...	2158	...	2203	...	2295		
Le-bray		TB	H	P	TB20	TB20	TB20	TB20	H	P	TB20	TB20	TB20	TB20	H	P	...	H	...	H	...	H		
	1948 **	1952-2011	2020	2021	2076	2096	2116	2141	2142	2197	2217	2237	2262	2263	2318									
Peitz		TB	H	P	TB10	TB20	TA20	H	P	TB10	TB20	TA20	H	P	TB10									
	1967	1968-2014	2020	2021	2026	2031	2036	2041	2046	2051	2056	2071	2086	2101	2116	2131	2141	2142	...	2262	2263	...	2298	
Solling-beech		TA	H	P	TA20	TA20	TA20	TA20	TA20	TA20	TA20	TA20	TA20	TA20	TB20	TB20	H	P		H	P		TA20	
	1967	1968-2014	2020	2021	2026	2031	2036	2041	2046	2051	2056	2071	2086	2101	2116	2131	2141	2142	...	2262	...	2298		
Solling-spruce		TB	H	P	TA15	TA15	TA15	TA15	TA15	TA15	TA15	TA15	TA15	TA15	TB15	TB15	H	P	...	H	...	TA15		
	1944 ***	1945-2010	2026	2041	2061	2062	2077	2082	2087	2092	2097	2107	2112	2122	2132	2142	2152	2167	2182	2202	2203	...	2308	
Soro		TA	TA10	TA10	H	P	TB20	TB20	TB20	TB20	TB20	TB10	TB10	TB10	TB10	TA10	TA10	TA10	TA10	H	P	...	TA10	

*__Kroof (beech+spruce):__ plantings are delayed until beech is also harvested to harmonize the planting dates., ****Peitz:** some GCM data only starts in 1950, hence for future runs, you have to initialize these forests at the first time step after 1949 (i.e. 1952 for Peitz). For the historical runs you can start with the first available stand initialization. *****Soro:** Some GCM data only starts in 1950, hence for future runs, you have to initialize these forests at the first time step after 1949 (i.e. 1950 for Soro). For the historical validation runs you can start with the first available stand initialization.