

General information

Project name	Fam. Nooyen - Paulownia 2023		
Remover name	Tonny & Arie Nooyen		
Project code	NOYL002		
Location	NL, Deurne		
Area	12.40	ha	
Start year	2024		
Project duration	10	years	
Storage duration	20	years	estimated permanence of removal and storage
Biodiversity holding	20%		
Holding pool	20%		freed up when measurements confirm projection pathways
Project emissions	20%		LCA estimate, or specified when >20%

Per hectare

Baseline TEC	252	tCO2/ha	Below Ground and Soil Organic Carbon, following CDM AR-ACM0003, excl above ground carbon
Reference capacity	652	tCO2/ha	Using CEDA and Soil sample data
Storage potential	400	tCO2/ha	Projection +/- baseline

Per project

Projected storage	4,958	tCO2	storage potential per ha x area
LCA emissions	992	tCO2	project related emissions
Net storage potential	3,967	tCO2	project storage +/- emissions over 20 years

Removal credits issued

Credits first 10 years	1,983	credits	10/20 x net storage potential
Biodiversity holding	397	credits	
Holding Pool	397	credits	20% of first 10 years
Credits issued	1,190	credits	

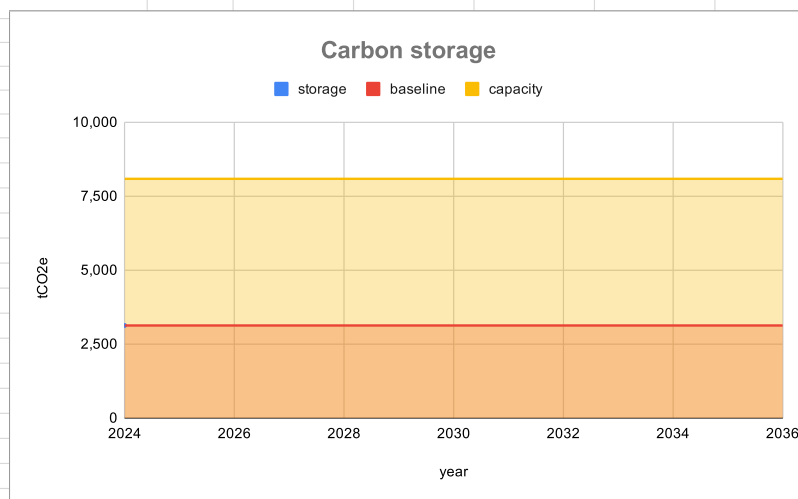
Field Code	Field name	Size (ha)	Owner	
001	Paulownia	12.4	Nooyen Agrarische Bedrijven B.V.	
002				
003				
004				
010	Reference			

[illegible]

Carbon Calculation for	NOYL002
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[illegible]

	2024	2027	2030	2033	2036
Measurement average	16.00 SOC g/kg	#DIV/0! SOC g/kg	#DIV/0! SOC g/kg	#DIV/0! SOC g/kg	#DIV/0! SOC g/kg
Sample depth	25 cm	#DIV/0! cm	#DIV/0! cm	#DIV/0! cm	#DIV/0! cm
Calculation depth	30 cm	30 cm	30 cm	30 cm	30 cm
Soil density	1.408 g/cm3	#DIV/0! g/cm3	#DIV/0! g/cm3	#DIV/0! g/cm3	#DIV/0! g/cm3
SOC (soil carbon) / ha	248 tCO2e/ha	#DIV/0! tCO2e/ha	#DIV/0! tCO2e/ha	#DIV/0! tCO2e/ha	#DIV/0! tCO2e/ha
AGB (above ground) / ha	4.13 tCO2e/ha	#DIV/0! tCO2e/ha	#DIV/0! tCO2e/ha	#DIV/0! tCO2e/ha	#DIV/0! tCO2e/ha
Storage current	3,124 tCO2e	#DIV/0! tCO2e	#DIV/0! tCO2e	#DIV/0! tCO2e	#DIV/0! tCO2e
Storage capacity	8,082 tCO2e	8,082 tCO2e	8,082 tCO2e	8,082 tCO2e	8,082 tCO2e



Sources							
value	source	URL	Notes				
CEDA aboveground biomass carbon	https://climateeurope.eu/dataceda	https://climateeurope.eu/dataceda	2018 data				
SOC	A critical review of the conventional SOC to SOM conversion factor (Geoderma, Volume 156, Issues 3–4, 15 May 2010, Pages 75–83)						
Density	Wageningen University	https://edepot.wur.nl/handle/10125/11676-019-01021-9	We've added these soil density levels to the calculation factors tab				
Paulownia growth	Berg et al (2018)	https://link.springer.com/article/10.1007/s11676-019-01021-9					
Reference data for capacity							
Soil Organic Carbon (SOC)	350.00	tCO2/ha	estimation based on https://esdac.jrc.ec.europa.eu/content/pan-european-soc-stock-agricultural-soils				
Trees (TEC excl SOC)	301.80	tCO2/ha	Total ecosystem carbon minus soil, see below				
CALCULATION							
Trees per hectare	800	trees/ha					
Damage percentage	1%	trees/y	corrected for replant (2% - 1% = 1%) https://link.springer.com/article/10.1007/s11676-019-01021-9				
Time first harvest	10	y					
Time successive harvests	5	y					
Harvest per harvest year	100%	%					
Wood volume per tree	1.0	m3					
Density dry	275	kg/m3	https://www.researchgate.net/publication/360278806_The_Influence_of_Age_on_the_Wood_Properties_of_Paulownia_tomentosa_Thunb_Steud				
BGB CO2 stock	301.80	tCO2/ha	belowground biomass stock year 5-10				
AGB and BGB CO2 stock	y	#trees	vol/tree m3	vol/ha	% in roots/tops	dry matter	CO2 stock
		trees/ha	m3	m3/ha	%	tons	tCO2/ha
	1	800	0.000	0	30%	0.00	0.00
	2	792	0.02	15.84	30%	5.66	10.38
	3	784	0.05	39.20	30%	14.02	25.69
	4	776	0.09	69.86	30%	24.98	45.79
	5	768	0.18	138.33	30%	49.45	90.66
	6	761	0.35	266.28	30%	95.19	174.52
	7	753	0.50	376.59	30%	134.63	246.82
	8	746	0.65	484.67	30%	173.27	317.66
	9	738	0.75	553.65	30%	197.93	362.87
	10	731	0.85	621.19	30%	222.08	407.14
	11	800	0.000	0	30%	0.00	0.00
	12	792	0.02	15.84	30%	5.66	10.38
	13	784	0.05	39.20	30%	14.02	25.69
	14	776	0.09	69.86	30%	24.98	45.79
	15	768	0.18	138.33	30%	49.45	90.66
	16	761	0.35	266.28	30%	95.19	174.52
	17	753	0.50	376.59	30%	134.63	246.82
	18	746	0.65	484.67	30%	173.27	317.66
	19	738	0.75	553.65	30%	197.93	362.87
	20	731	0.85	621.19	30%	222.08	407.14

from C to CO2	3.666666667		
soil density	% organic matter	% organic carbon	soil density
1.59	0.5	0.25	1.59
1.583	0.6	0.3	1.583
1.576	0.7	0.35	1.576
1.569	0.8	0.4	1.569
1.562	0.9	0.45	1.562
1.555	1	0.5	1.555
1.548	1.1	0.55	1.548
1.541	1.2	0.6	1.541
1.534	1.3	0.65	1.534
1.527	1.4	0.7	1.527
1.52	1.5	0.75	1.52
1.513	1.6	0.8	1.513
1.506	1.7	0.85	1.506
1.499	1.8	0.9	1.499
1.492	1.9	0.95	1.492
1.485	2	1	1.485
1.478	2.1	1.05	1.478
1.471	2.2	1.1	1.471
1.464	2.3	1.15	1.464
1.457	2.4	1.2	1.457
1.45	2.5	1.25	1.45
1.444	2.6	1.3	1.444
1.438	2.7	1.35	1.438
1.432	2.8	1.4	1.432
1.426	2.9	1.45	1.426
1.42	3	1.5	1.42
1.414	3.1	1.55	1.414
1.408	3.2	1.6	1.408
1.402	3.3	1.65	1.402
1.396	3.4	1.7	1.396
1.39	3.5	1.75	1.39
1.385	3.6	1.8	1.385
1.38	3.7	1.85	1.38
1.375	3.8	1.9	1.375
1.37	3.9	1.95	1.37
1.365	4	2	1.365
1.36	4.1	2.05	1.36
1.355	4.2	2.1	1.355
1.35	4.3	2.15	1.35
1.345	4.4	2.2	1.345
1.34	4.5	2.25	1.34

1.335	4.6	2.3	1.335
1.33	4.7	2.35	1.33
1.325	4.8	2.4	1.325
1.32	4.9	2.45	1.32
1.315	5	2.5	1.315
1.31	5.1	2.55	1.31
1.305	5.2	2.6	1.305
1.3	5.3	2.65	1.3
1.295	5.4	2.7	1.295
1.29	5.5	2.75	1.29
1.285	5.6	2.8	1.285
1.28	5.7	2.85	1.28
1.275	5.8	2.9	1.275
1.27	5.9	2.95	1.27
1.265	6	3	1.265
1.26	6.1	3.05	1.26
1.255	6.2	3.1	1.255
1.25	6.3	3.15	1.25
1.245	6.4	3.2	1.245
1.24	6.5	3.25	1.24
1.234	6.6	3.3	1.234
1.228	6.7	3.35	1.228
1.222	6.8	3.4	1.222
1.216	6.9	3.45	1.216
1.21	7	3.5	1.21
1.204	7.1	3.55	1.204
1.198	7.2	3.6	1.198
1.192	7.3	3.65	1.192
1.186	7.4	3.7	1.186
1.18	7.5	3.75	1.18
1.175	7.6	3.8	1.175
1.17	7.7	3.85	1.17
1.165	7.8	3.9	1.165
1.16	7.9	3.95	1.16
1.155	8	4	1.155
1.15	8.1	4.05	1.15
1.145	8.2	4.1	1.145
1.14	8.3	4.15	1.14
1.135	8.4	4.2	1.135
1.13	8.5	4.25	1.13
1.126	8.6	4.3	1.126
1.122	8.7	4.35	1.122
1.118	8.8	4.4	1.118

1.114	8.9	4.45	1.114
1.11	9	4.5	1.11
1.106	9.1	4.55	1.106
1.102	9.2	4.6	1.102
1.098	9.3	4.65	1.098
1.094	9.4	4.7	1.094
1.09	9.5	4.75	1.09
1.086	9.6	4.8	1.086
1.082	9.7	4.85	1.082
1.078	9.8	4.9	1.078
1.074	9.9	4.95	1.074
1.07	10	5	1.07
1.066	10.1	5.05	1.066
1.062	10.2	5.1	1.062
1.058	10.3	5.15	1.058
1.054	10.4	5.2	1.054
1.05	10.5	5.25	1.05
1.046	10.6	5.3	1.046
1.042	10.7	5.35	1.042
1.038	10.8	5.4	1.038
1.034	10.9	5.45	1.034
1.03	11	5.5	1.03
1.026	11.1	5.55	1.026
1.022	11.2	5.6	1.022
1.018	11.3	5.65	1.018
1.014	11.4	5.7	1.014
1.01	11.5	5.75	1.01
1.005	11.6	5.8	1.005
1	11.7	5.85	1
0.995	11.8	5.9	0.995
0.99	11.9	5.95	0.99
0.985	12	6	0.985
0.98	12.1	6.05	0.98
0.975	12.2	6.1	0.975
0.97	12.3	6.15	0.97
0.965	12.4	6.2	0.965
0.96	12.5	6.25	0.96
0.957	12.6	6.3	0.957
0.954	12.7	6.35	0.954
0.951	12.8	6.4	0.951
0.948	12.9	6.45	0.948
0.945	13	6.5	0.945
0.942	13.1	6.55	0.942

0.939	13.2	6.6	0.939
0.936	13.3	6.65	0.936
0.933	13.4	6.7	0.933
0.93	13.5	6.75	0.93
0.927	13.6	6.8	0.927
0.924	13.7	6.85	0.924
0.921	13.8	6.9	0.921
0.918	13.9	6.95	0.918
0.915	14	7	0.915
0.912	14.1	7.05	0.912
0.909	14.2	7.1	0.909
0.906	14.3	7.15	0.906
0.903	14.4	7.2	0.903
0.9	14.5	7.25	0.9
0.897	14.6	7.3	0.897
0.894	14.7	7.35	0.894
0.891	14.8	7.4	0.891
0.888	14.9	7.45	0.888
0.885	15	7.5	0.885
0.882	15.1	7.55	0.882
0.879	15.2	7.6	0.879
0.876	15.3	7.65	0.876
0.873	15.4	7.7	0.873
0.87	15.5	7.75	0.87
0.867	15.6	7.8	0.867
0.864	15.7	7.85	0.864
0.861	15.8	7.9	0.861
0.858	15.9	7.95	0.858
0.855	16	8	0.855
0.852	16.1	8.05	0.852
0.849	16.2	8.1	0.849
0.846	16.3	8.15	0.846
0.843	16.4	8.2	0.843
0.84	16.5	8.25	0.84
0.837	16.6	8.3	0.837
0.834	16.7	8.35	0.834
0.831	16.8	8.4	0.831
0.828	16.9	8.45	0.828
0.825	17	8.5	0.825
0.822	17.1	8.55	0.822
0.819	17.2	8.6	0.819
0.816	17.3	8.65	0.816
0.813	17.4	8.7	0.813

0.81	17.5	8.75	0.81
0.808	17.6	8.8	0.808
0.806	17.7	8.85	0.806
0.804	17.8	8.9	0.804
0.802	17.9	8.95	0.802
0.8	18	9	0.8
0.798	18.1	9.05	0.798
0.796	18.2	9.1	0.796
0.794	18.3	9.15	0.794
0.792	18.4	9.2	0.792
0.79	18.5	9.25	0.79
0.788	18.6	9.3	0.788
0.786	18.7	9.35	0.786
0.784	18.8	9.4	0.784
0.782	18.9	9.45	0.782
0.78	19	9.5	0.78
0.778	19.1	9.55	0.778
0.776	19.2	9.6	0.776
0.774	19.3	9.65	0.774
0.772	19.4	9.7	0.772
0.77	19.5	9.75	0.77
0.768	19.6	9.8	0.768
0.766	19.7	9.85	0.766
0.764	19.8	9.9	0.764
0.762	19.9	9.95	0.762
0.76	20	10	0.76
0.758	20.1	10.05	0.758
0.756	20.2	10.1	0.756
0.754	20.3	10.15	0.754
0.752	20.4	10.2	0.752
0.75	20.5	10.25	0.75
0.748	20.6	10.3	0.748
0.746	20.7	10.35	0.746
0.744	20.8	10.4	0.744
0.742	20.9	10.45	0.742
0.74	21	10.5	0.74
0.738	21.1	10.55	0.738
0.736	21.2	10.6	0.736
0.734	21.3	10.65	0.734
0.732	21.4	10.7	0.732
0.73	21.5	10.75	0.73
0.728	21.6	10.8	0.728
0.726	21.7	10.85	0.726

0.724	21.8	10.9	0.724
0.722	21.9	10.95	0.722
0.72	22	11	0.72
0.718	22.1	11.05	0.718
0.716	22.2	11.1	0.716
0.714	22.3	11.15	0.714
0.712	22.4	11.2	0.712
0.71	22.5	11.25	0.71
0.709	22.6	11.3	0.709
0.708	22.7	11.35	0.708
0.707	22.8	11.4	0.707
0.706	22.9	11.45	0.706
0.705	23	11.5	0.705
0.704	23.1	11.55	0.704
0.703	23.2	11.6	0.703
0.702	23.3	11.65	0.702
0.701	23.4	11.7	0.701
0.7	23.5	11.75	0.7
0.699	23.6	11.8	0.699
0.698	23.7	11.85	0.698
0.697	23.8	11.9	0.697
0.696	23.9	11.95	0.696
0.695	24	12	0.695
0.694	24.1	12.05	0.694
0.693	24.2	12.1	0.693
0.692	24.3	12.15	0.692
0.691	24.4	12.2	0.691
0.69	24.5	12.25	0.69
0.688	24.6	12.3	0.688
0.686	24.7	12.35	0.686
0.684	24.8	12.4	0.684
0.682	24.9	12.45	0.682
0.68	25	12.5	0.68
0.678	25.1	12.55	0.678
0.676	25.2	12.6	0.676
0.674	25.3	12.65	0.674
0.672	25.4	12.7	0.672
0.67	25.5	12.75	0.67
0.668	25.65	12.825	0.668
0.666	25.8	12.9	0.666
0.664	25.95	12.975	0.664
0.662	26.1	13.05	0.662
0.66	26.25	13.125	0.66

0.658	26.4	13.2	0.658
0.656	26.55	13.275	0.656
0.654	26.7	13.35	0.654
0.652	26.85	13.425	0.652
0.65	27	13.5	0.65
0.647	27.2	13.6	0.647
0.644	27.4	13.7	0.644
0.641	27.6	13.8	0.641
0.638	27.8	13.9	0.638
0.635	28	14	0.635
0.632	28.2	14.1	0.632
0.629	28.4	14.2	0.629
0.626	28.6	14.3	0.626
0.623	28.8	14.4	0.623
0.62	29	14.5	0.62
0.618	29.2	14.6	0.618
0.616	29.4	14.7	0.616
0.614	29.6	14.8	0.614
0.612	29.8	14.9	0.612
0.61	30	15	0.61
0.608	30.2	15.1	0.608
0.606	30.4	15.2	0.606
0.604	30.6	15.3	0.604
0.602	30.8	15.4	0.602
0.6	31	15.5	0.6
0.598	31.2	15.6	0.598
0.596	31.4	15.7	0.596
0.594	31.6	15.8	0.594
0.592	31.8	15.9	0.592
0.59	32	16	0.59
0.588	32.2	16.1	0.588
0.586	32.4	16.2	0.586
0.584	32.6	16.3	0.584
0.582	32.8	16.4	0.582
0.58	33	16.5	0.58
0.578	33.2	16.6	0.578
0.576	33.4	16.7	0.576
0.574	33.6	16.8	0.574
0.572	33.8	16.9	0.572
0.57	34	17	0.57
0.568	34.2	17.1	0.568
0.566	34.4	17.2	0.566
0.564	34.6	17.3	0.564

0.562	34.8	17.4	0.562
0.56	35	17.5	0.56
0.558	35.2	17.6	0.558
0.556	35.4	17.7	0.556
0.554	35.6	17.8	0.554
0.552	35.8	17.9	0.552
0.55	36	18	0.55
0.548	36.2	18.1	0.548
0.546	36.4	18.2	0.546
0.544	36.6	18.3	0.544
0.542	36.8	18.4	0.542
0.54	37	18.5	0.54
0.538	37.2	18.6	0.538
0.536	37.4	18.7	0.536
0.534	37.6	18.8	0.534
0.532	37.8	18.9	0.532
0.53	38	19	0.53
0.528	38.2	19.1	0.528
0.526	38.4	19.2	0.526
0.524	38.6	19.3	0.524
0.522	38.8	19.4	0.522
0.52	39	19.5	0.52
0.518	39.2	19.6	0.518
0.516	39.4	19.7	0.516
0.514	39.6	19.8	0.514
0.512	39.8	19.9	0.512
0.51	40	20	0.51
0.508	40.2	20.1	0.508
0.506	40.4	20.2	0.506
0.504	40.6	20.3	0.504
0.502	40.8	20.4	0.502
0.5	41	20.5	0.5
0.499	41.2	20.6	0.499
0.498	41.4	20.7	0.498
0.497	41.6	20.8	0.497
0.496	41.8	20.9	0.496
0.495	42	21	0.495
0.494	42.2	21.1	0.494
0.493	42.4	21.2	0.493
0.492	42.6	21.3	0.492
0.491	42.8	21.4	0.491
0.49	43	21.5	0.49
0.488	43.2	21.6	0.488

0.486	43.4	21.7	0.486
0.484	43.6	21.8	0.484
0.482	43.8	21.9	0.482
0.48	44	22	0.48
0.478	44.2	22.1	0.478
0.476	44.4	22.2	0.476
0.474	44.6	22.3	0.474
0.472	44.8	22.4	0.472
0.47	45	22.5	0.47
0.469	45.2	22.6	0.469
0.468	45.4	22.7	0.468
0.467	45.6	22.8	0.467
0.466	45.8	22.9	0.466
0.465	46	23	0.465
0.464	46.2	23.1	0.464
0.463	46.4	23.2	0.463
0.462	46.6	23.3	0.462
0.461	46.8	23.4	0.461
0.46	47	23.5	0.46
0.458	47.2	23.6	0.458
0.456	47.4	23.7	0.456
0.454	47.6	23.8	0.454
0.452	47.8	23.9	0.452
0.45	48	24	0.45
0.448	48.2	24.1	0.448
0.446	48.4	24.2	0.446
0.444	48.6	24.3	0.444
0.442	48.8	24.4	0.442
0.44	49	24.5	0.44