

Supplementary Information

Table S1. Climate inputs into ZELIG-CFS for Sioux Lookout, Ontario. Three separate climate scenarios were tested: current (1980 to 2010), representative concentration pathway (RCP) 2.6 (2020 to 2050), and RCP 4.5 (2020 to 2050). Numbers represent averages across 30 years and standard deviations in parentheses.

Month	Temperature (°C)			Precipitation (mm)		
	Current	RCP 2.6	RCP 4.5	Current	RCP 2.6	RCP 4.5
January	-17.4 (3.0)	-14.6 (2.7)	-14.9 (2.2)	33.6 (15.3)	34.9 (15.0)	28.6 (11.7)
February	-13.8 (2.8)	-8.6 (3.1)	-10.9 (2.9)	25.7 (10.1)	22.5 (11.9)	26.8 (9.3)
March	-7.4 (2.0)	-4.7 (2.4)	-4.5 (2.3)	30.9 (16.9)	40.6 (25.7)	38.7 (17.1)
April	2.2 (1.7)	4.7 (1.7)	5.4 (1.9)	37.4 (22.6)	64.8 (42.1)	41.5 (30.2)
May	10.1 (1.8)	11.5 (1.7)	11.5 (1.9)	72.6 (30.9)	78.7 (33.0)	86.4 (48.5)
June	15.6 (1.3)	18.4 (1.6)	18.0 (1.3)	120.4 (49.5)	101.5 (59.2)	109.1 (40.9)
July	18.4 (1.0)	20.9 (1.2)	21.4 (0.9)	106.8 (32.6)	103.4 (19.1)	102.9 (42.3)
August	17.1 (1.1)	21.3 (1.2)	20.7 (1.2)	85.5 (45.8)	70.5 (19.5)	80.5 (35.4)
September	11.4 (1.5)	15.7 (1.2)	14.3 (1.2)	88.7 (46.4)	99.1 (64.2)	101.9 (39.5)
October	4.2 (1.7)	6.3 (1.3)	6.9 (1.5)	64.8 (22.1)	78.7 (20.4)	74.5 (35.8)
November	-4.8 (1.9)	-2.5 (2.3)	-2.8 (2.0)	59.3 (21.8)	82.0 (38.7)	60.1 (23.9)
December	-14.0 (3.5)	-12.6 (3.1)	-11.7 (2.9)	38.3 (16.1)	32.4 (16.7)	34.4 (14.3)

Table S2. Climate inputs into ZELIG-CFS for Dryden, Ontario. Three separate climate scenarios were tested: current (1980 to 2010), representative concentration pathway (RCP) 2.6 (2020 to 2050), and RCP 4.5 (2020 to 2050). Numbers represent averages across 30 years with standard deviations in parentheses.

Month	Temperature (°C)			Precipitation (mm)		
	Current	RCP 2.6	RCP 4.5	Current	RCP 2.6	RCP 4.5
January	-17.6 (3.4)	-14.2 (2.7)	-14.0 (2.5)	21.9 (12.1)	26.4 (13.0)	23.1 (9.4)
February	-12.7 (3.2)	-8 (2.8)	-10.2 (3.0)	19.4 (9.2)	14.4 (7.4)	20.6 (7.7)
March	-6.3 (2.7)	-4.6 (2.3)	-4.1 (2.0)	27.9 (17.4)	32.8 (20.5)	30.9 (13.5)
April	2.6 (1.8)	5.4 (2.2)	6.5 (1.9)	41.5 (34.6)	47.1 (44.7)	38.9 (26.5)
May	10.6 (1.6)	12.5 (1.9)	12.2 (1.5)	64.0 (26.0)	72.1 (40.5)	72.0 (44.0)
June	16.0 (1.2)	18.7 (1.5)	18.0 (1.3)	102.2 (42.9)	100.4 (52.1)	118.4 (43.9)
July	18.4 (1.0)	21.6 (0.9)	21.6 (0.8)	123.1 (41.6)	109.0 (25.0)	104.3 (53.5)
August	17.9 (1.0)	21.6 (1.2)	20.8 (1.2)	87.0 (31.9)	70.2 (16.6)	83.6 (18.7)
September	11.4 (1.0)	15.4 (1.1)	14.2 (1.2)	87.0 (41.5)	80.1 (44.2)	106.1 (38.2)
October	4.7 (1.8)	6.7 (1.7)	7.2 (1.4)	52.4 (25.4)	60.4 (18.9)	70.1 (34.9)
November	-5.7 (2.3)	-2.2 (2.1)	-2.5 (2.1)	38.4 (17.1)	59.1 (39.3)	52.2 (19.7)
December	-14.3 (3.4)	-11.4 (3.2)	-11.8 (3.2)	27.0 (12.7)	23.4 (13.6)	26.9 (10.5)

Table S3. Climate inputs into ZELIG-CFS for Petawawa, Ontario. Three separate climate scenarios were tested: current (1980 to 2010), representative concentration pathway (RCP) 2.6 (2020 to 2050), and RCP 4.5 (2020 to 2050). Numbers represent averages across 30 years with standard deviations in parentheses.

Month	Temperature (°C)			Precipitation (mm)		
	Current	RCP 2.6	RCP 4.5	Current	RCP 2.6	RCP 4.5
January	-12.2 (2.2)	-9.0 (2.2)	-9.8 (2.7)	53.6 (19.7)	55.0 (15.2)	44.6 (23.2)
February	-10.2 (2.6)	-7.4 (2.3)	-7.1 (2.4)	45.7 (17.8)	48.7 (27.6)	37.6 (21.3)
March	-3.4 (1.9)	-0.5 (1.7)	-2.2 (1.4)	57.7 (31.9)	60.9 (20.4)	46.4 (23.8)
April	5.4 (1.4)	7.1 (1.0)	7.8 (1.3)	61.4 (28.0)	80.2 (30.4)	85.9 (44.6)
May	12.4 (1.1)	13.5 (1.0)	14.0 (1.3)	81.5 (28.5)	82.3 (34.2)	99.9 (24.7)
June	16.8 (1.0)	19.1 (1.2)	18.2 (1.1)	76.9 (32.4)	83.6 (40.7)	97.7 (27.9)
July	19.9 (1.0)	22.5 (0.9)	22.1 (1.0)	94.7 (40.7)	96.7 (66.5)	75.1 (38.5)
August	18.3 (1.0)	21.7 (0.9)	21.8 (1.1)	79.4 (29.6)	92.9 (33.1)	76.9 (22.8)
September	13.9 (1.1)	17.2 (1)	16.1 (1.1)	81.4 (29.6)	76.3 (31.7)	69.7 (25.0)
October	7.4 (0.9)	9.2 (1.4)	9.2 (1.1)	79.6 (27.4)	88.7 (30.8)	80.3 (29.5)
November	0.1 (1.4)	2.2 (1.4)	1.7 (1.3)	69.3 (18.3)	84.2 (32.5)	69.6 (18.4)
December	-7.6 (2.5)	-6.4 (1.8)	-5.6 (1.5)	63.1 (26.9)	70.1 (43.4)	73.8 (33.6)

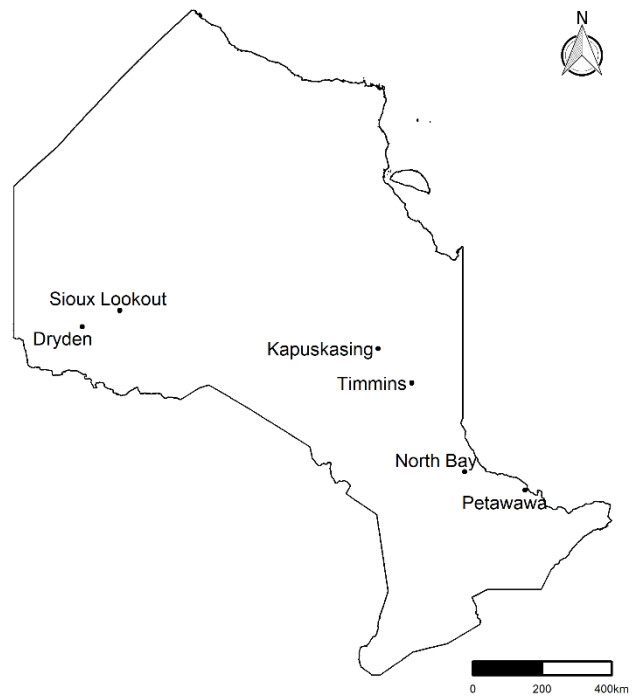


Figure S1. Location of NEBIE sites across Ontario, Canada.

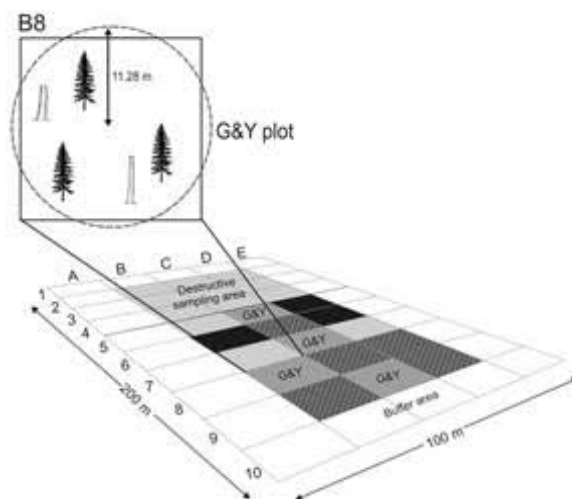


Figure S2. Experimental unit layout. Treatments were individually applied at the two-hectare unit scale with four sampling growth and yield plots randomly located in each experimental unit. For each treatment, four replicates of each experimental unit (i.e., 20 total units) were established at Sioux Lookout, Kapuskasing, Dryden, and Petawawa, Ontario, with three replicates (i.e., 15 total units) at Timmins and North Bay.