

**Table S1.** Chemical properties of soil.

Year	pH	C <sub>org</sub> (g kg <sup>-1</sup> )	Available macronutrients (mg kg <sup>-1</sup> )		
			P	K	Mg
2017	5.4	18.1	57	118	46
2018	5.6	24.6	55	129	39
2019	5.6	20.2	60	121	52

The methods for analyzing the chemical properties of soil were described previously by Bogucka and Jankowski [26]

**Table S2.** Parameters of agricultural machines used in the production technology of Jerusalem artichoke biomass (2018–2020) (adapted from Bogucka and Jankowski [30])

Farming operations	Parameters of self-propelled machines	Parameters of accompanying machines	Service life (h)		Weight (kg)		Performance of self-propelled machines and accompanying machines (ha h <sup>-1</sup> )	Fuel consumption (l h <sup>-1</sup> )
			Self-propelled machines	Accompanying machines	Self-propelled machines	Accompanying machines		
Skimming (5–8 cm)	125 kW	6 (number of furrows)	10000	2000	7105	2000	3.5	12.0
Fall plowing (18–22 cm)	184 kW	6 (number of furrows)	12000	2000	10980	2000	2.5	25.5
Tillage-cultivation unit (5–8 cm)	125 kW	5 m (working width)	10000	2000	7105	2650	4.9	21.9
Planting	53 kW	4 (number of rows)	9000	800	5635	420	0.7	8.2
Mineral fertilization	125 kW	30 m (working width)	10000	1200	7105	700	17.6	11.1
Weeding between rows	53 kW	2.7 (working width)	9000	800	5635	438	1.0	8.7
Harvest (aerial biomass)	232 kW/3.0 m (working width)	—	3000	—	3500	—	1.0–2.0 <sup>a</sup>	22.5–37.5 <sup>a</sup>
Harvest (tubers)	151 kW	2 (number of furrows)	10000	600	10050	9200	0.45–0.55 <sup>a</sup>	25.0–30.0 <sup>a</sup>
Biomass transport (aerial biomass)	125 kW	12 Mg (carrying capacity)	10000	1600	7105	3900	—	8.0
Biomass transport (tubers)	151 kW	15 Mg (carrying capacity)	10000	1600	10050	4800	—	25.0
Loading	55 kW /2500 kg (load capacity)	—	10000	—	4922	—	—	3.5

<sup>a</sup> differences result from variations in biomass yield

**Table S3.** *F*-test statistics in ANOVA

Parameter	Year	Production cycle	Year × Production cycle
Fresh matter yield (Mg ha <sup>-1</sup> )	59.997**	238.550**	7.519**
Dry matter content (g kg <sup>-1</sup> )	0.559 <i>ns</i>	66.785**	0.379 <i>ns</i>
Dry matter yield (Mg ha <sup>-1</sup> )	86.975**	238.234**	7.552**
Lower heating value (MJ ha <sup>-1</sup> )	3.286 <i>ns</i>	87.548**	0.576 <i>ns</i>
Energy output (GJ ha <sup>-1</sup> )	33.730**	75.707**	2.437 <i>ns</i>
Energy gain (GJ ha <sup>-1</sup> )	29.972**	54.477**	2.760 <i>ns</i>
Energy efficiency ratio	19.408**	12.962**	11.184**

\*significant  $p \leq 0.05$ ; \*\*significant  $p \leq 0.01$ ; *ns* – not significant