

Mardimäe Organic Farm, EE

Organic production

certified acc. (EU) 2018/848 since 2002



Buckwheat harvesting



Yield enhancing strategy, what makes the farm special?

Farm with sheep (grazing sheep), 40% clover grass in rotation, transitioning to gluten-free production

Optimisation wishes and questions: Reduce ploughing and soil improvement through cover cropping

Sten Kraam

Farm: mixed farm, 350 ha arable land, 45 ha permanent grassland, 70 sheep in 2024

Soil: mostly sandy loam

Rainfall and temperatures:

2003-2023	J	F	M	A	M	J	J	A	S	O	N	D	Year
Rainfall [mm]	22.4	20.0	18.9	28.5	51.8	76.1	62.2	83.4	51.1	57.3	39.1	33.5	544.2
Temperature [°C]	-4.7	-4.3	-0.4	5.6	11.8	15.8	18.2	17.0	12.2	6.3	1.9	-1.6	6.5

Arable crops, yields, fertilisation, 2019-2024, (rotation 1) [t/ha]:

	2019	2020	2021	2022	2023	2024	Av.
1y Red clover grass*	xxx						
2y Red clover grass*	xxx						
3y Red clover grass*	xxx						
4 Oats	2.2	2.1	1.4	2.9	1.9	1.5	2.0
5 W-Wheat	-	-	2.4	2.2	1.8	2.2	2.2
6 Buckwheat	1.4	1.1	1.0	0.45	1.6	1.5	1.2
7 S-Wheat	1.8	1.3	1.2	1.5	1.3	1.2	3.4
8 Field peas	-	-	1.7	1.5	1.4	1.1	1.4
9 W-Rye	-	-	-	3.5	2.9	2.4	2.9
Fertilisers							
Deep Bedding Sheep Manure	20 (25 ha)	20 (20 ha)	20 (20 ha)	20 (15 ha)	20 (15 ha)	20 (10 ha)	20 (ca 15 ha p year)
Wood Ash (nearby wood pellet plant)	-	-	4 (5 ha)	4 (20 ha)	4 (15 ha)	4 (20 ha)	4 (ca 20 ha p year)

2023 & 2024 Drought in summer. * Red Clover grasslands – biomass is not measured

(Red Clover grass: 1, 2, 3 years old grasslands with 6-7 plant species and mostly sown under cereals in spring)

Grains: 86% DM. Nutrient-input by sheep solid manure (%): N 0.4, K 0.7, P 0.07, 20 t/ha =>[kg/ha]: 80 N, 140 K, 14 P

There were different fields, with different soils and problems. In farm 3 different rotations: 1) oat with red clover undersowing-red clover-red clover- winter cereal (winter-wheat and winter-rye). 2) oat-winter wheat or buckwheat-pea-oat with red clover undersowing-red clover-red clover. 3) On the problematic fields (sandy fields where the soil needs to be improved), clover is grown for 3 years. No intercrops, but mostly cover crops after harvesting in autumn.

Photos, copyright: S. Kraam (2025)

Machinery

Tractors

	Power HP
Tractor Claas Axion	235
Tractor Valtra T190	190
Tractor Claas Arion 135 hp	135

Cultivation

	Working width (m)
Cultivator Bednar Swifter SO_Profi	6
Plough Kverneland ES-100-200	4 furrows
Tine cultivator Väderstad Cultus	3.5
Tine weeder Einböck	9
Disc harrow Lemken Rubin	4.5
Kuhn Espro Drill	4

Fertilisation

Manure spreader MTU-18	ca. 10
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Harvest

Rostselmash vector 560	6
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Estonian University of Life Sciences and Mardimäe Organic Farm, 01/2026