Güter Brook und Christinenfeld, DE

Organic farming since 1995, association: Naturland since 2023

Drone seeding of undersown crops

Richard von Behr

Yield enhancing strategy, what makes the farm special?

Nutrient cooperations, import and turnover: Clover grass ↔ dairy manure, straw↔champost, →poulty dry manure, →grazing sheep on clover grass and intercrops, *hoeing and greening:* wide row (25 cm) with consequent hoeing in grain-crops, consequent use of undersown green crops and of intercrops

Optimisation wishes and questions: constant yield level in broad beans, increase of on-farm nutrient transfer (cut and carry, digester)

Cash crop farm: 1350 ha arable crops, 55 ha permanent grassland, storing (4500 t) and processing line for cereals and pulses for food, feed and seed market, dairy production until 2020

Soils: loamy sand, sandy loam, stagnic Luvisols-Cambisols from boulder clay

Rainfall and temperatures

2003-2023	J	F	M	A	M	J	J	A	S	O	N	D	Year
Rainfall [mm]	48	44	33	26	49	61	60	61	48	51	47	52	580
Temperature [°C]	2.0	2.3	4.4	8.0	11.9	15.8	17.9	17.8	14.9	10.8	6.3	3.3	9.6

Fruchtfolge, Erträge, Düngung, 2019-2024 [t/ha]:

	2019	2020	2021	2022	2023	2024	2019-24
1-2 Red clover grass	Actual level: 1st cut 12, 2nd cut 10, 3rd grazing/mulch:						
3 W-Wheat	4.03	2.96	4.44	4.1	3.2	2.04	3.46
4 S-Oats [CS, MS]	4.16	4.27	3.45	4.27	1.65	2.05	3.31
5 W-Spelt[CDM]	4.75	3.01	4.08	4.0	3.05	2.34	3.54
6 Broad beans	3.01	3.14	2.37	1.37	2.01	1.21	2.18
7 W_Wheat/W-Spelt[CDM] 8 S-Oats[CS,MS] 9 W-Wheat/W-Spelt (undersown)[CDM]							
3 W-Rye	4.17	2.94	4.1	3.6	2.77	2.44	3.34
3 W-Triticale	3.66	3.13	3.69	4.27	5.58	-	4.07
5 Field peas	2.6	3.74	1.95	3.44	1.63	-	2.67
5 White Lupin	1.99	1.28	3.42	1.3	-	-	2
6 S-Wheat	2.71	2.68	2.58	4.32	2.05	1.05	2.56

Grains 86% dry matter (DM), Clover grass 32% DM: [CS]**Cattle manure** [kg/t FM]: 5 N, 1.3 P, 5.8 K [MS]**Champost**: 6.7 N, 1.7 P, 6.1 K, [CDM]**Chicken dry manure**: 17 N, 7.4 P, 11.6 K, [BD]**Digestate**: 199 oDM; 6.2 N; 2.1 NH_4-N; 1.6 P; 5.3 K, **Total available per year** (e.g. 2023/2024): CS 3500 t/a; MS 3000 t/a; CDM 2000 t/a, BD 800 t/a, nutrients available in arable cropping by this [kg/ha]: Ø 57 N, 19 P, 49 K**: Intercrops:** always prior to spring crops (frost sensitive with legumes), intercrops in summer after oats in the test

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Machinery

Tractors	Power (HP)
2 x Fendt 942, twin tyres, RTK (seeding, power harrow seedbed, stubble cultivation)	100
Fendt 930, RTK (ploughing, transport)	419
CLAAS Axion 920, GPS (ploughing, transport)	325
Fendt 724, RTK (hoeing, harrowing, seedbed combination)	243
CLAAS Arion 620 (colleciting stones, harrowing, roller compaction)	128
Belarus (drainage)	

Self-propelled machines	Working width (m)
Combinded Harvestor, New Holland CR 9.90, MacDon belt cutting unit	12
JCB Telescopic wheel loader	
Stihl Forklift	

Cultivation	
Seeding Väderstadt Rapid, 12,5 cm row distance, for hoeing 25 cm	8
Lemken Koralin, stubble cultivation, tank for direct seeding	8.4
2 x Överum mouldboard plough 7/8 furrows	3.5/4
Lemken Zirkon, power harrow	6
Lemken Kompaktor, seedbed compaction	5
2 x Treffler weed harrow, hardened metal tips	16
Einböck hoe, camera + section control	8
Köckerling Vector, heavy cultivator	4,5
Mulcher	

Transport

2 x Annaburger push off trailer 52 cbm

4 x HW 80 trailer 11 t

Fertilisation

Manures via contactor

Seed processing (4.500 t storage capacity)

Westrup sieve cleaner, pre-cleaning

Westrup cylinder seed sorter, fine-cleaningr

Westrup gravity separator, fine-cleaning

Damas sieve cleaner, fine-cleaning

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