Buchenhof, DE

Organic since 1989

Cameleon

Johannes Baasch

Yield Improvement Strategy, what does the farm special?

Nutrient import: Feed-manure cooperation with dairy farms – the arable Farm grows clover grass and the dairy farm delivers slurry and farm yard manure. Laying hens and fattening pigs, partly fed on imported feed, bring nutrients into crop rotation via manure. Very diverse crop spectrum. By many different crops, the farm can react to the weather conditions and avoid poor cultivation conditions by switching to another crop. Growing of certified seeds on 80 ha.

Ideas fpr Optimization and Questions:

Above all, less yield fluctuations. Due to different legumes, there is a risk of incompatibility of legumes with each other. How can the work processes, especially weed control, be improved via robotics? Problem weeds Hederich (Raphanus raphanistrum) and field mustard (Sinapis arvensis). Avoid soil compaction, e.g. through controlled traffic farming

Farm: arable farm, 530 ha arable land, 2000 fattening pigs, 20000 Laying hens

Soil: sandy loam (sL), Parabrown soil (45-55 BP)

Rainfall and temperatures (German Meteorological Service station Kiel-Holtenau)

2014-2023	J	F	M	A	M	J	J	A	S	O	N	D	Year
Rainfall [mm]	75.1	62.3	47.7	44.8	51.1	59.5	72.6	67.0	52.0	76.1	63.2	79.9	751
Temperature [°C]	3.1	3.8	5.3	8.0	12.2	16.6	17.8	17.9	15.1	11.4	6.8	4.5	10.2

Crops, yields and fertilisation, 2021-2025 [t/ha]:

Crop rotation plan	2021	2022	2023	2024	2025	Mean
1+2 Clover grass Sowing either as underseed in the cover crop or bare seed with ploughing in August. Breaking the clover gras for following crop by plow in March. Sulfoprill, Patenkali or Kieserit to fertilize sulfure	4 cuts, (feed-manure cooperation)					
3 Oats Cattle or pig manure before sowing - and in any case chicken manure	5.3	5.2	3.3	5.3	5.2	**4.9**
4 Winter Broad Bean (Seed multiplication) Sulfoprill, Patenkali or Kieserit to fertilize sulfure	-	3.4	2.6	2.9	3.5	**3.1**
5 Spelt Pig-/Cattle Slurry in spring and unterseed for the following barley	4.6	4.4	2.7	4.0	5.5	**4.2**
6 Spring-(malting)Barley Cattle or pig slurry before sowing – and unterseed for the following ryegrass	2.8	4.9	2.1	4.1	3.1	**3.4**
7 perennial ryegrass (Seed multiplication) Pig-/Cattle Slurry	1.3	1.8	0.9	1.6	1.2	**1.4**
8 a) Wi-Wheat Pig-/Cattle-Slurry	3.5	4.3	3.1	2.1	4.7	**3.5**
8 b) Wi-Rye Pig-/Cattle-Slurry					5.6	
8 c) Spelt Pig-/Cattle-Slurry	-	4.8	5.0	4.1	5.5	**4.9**
9 a) Grain maize Yield with 86% DM/14% moisture; harvest with 67% DM and storage in sealed grain bags with propionic acid; chicken or pig manure before sowing, no slurry; Maize is feed to farm owned pigs	8.5	6.2	4.5	7.4	8.7	**7.1**
9 b) Wi-Rapeseed/Canola (Seed multiplication) dry chicken manure or pig manure before sowing	2.1	3.7	2.3	1.3	-	**2.4**
10 a) Spring-Broad Bean cattle or pig manure before sowing, later Kieserit or Patentkali. Nitrogen in the soil is used to break down the carbon from the maize straw of previous crop. The Broad bean produces its own N.	3.2	3.4	1.9	3.5	4.4	**3.3**
10 b) Spelt follows Rapeseed seed multiplication, Pig-/Cattle-Slurry				4.4	5.5	
(11) Spelt Pig-/Cattle-Slurry, dadegrading to get Nutrient of broad bean, following crop clover gras	4.6	4.4	2.7	4.0	5.5	**4.2**

Grain 86% clover grass 32 % DM; **Total available [t/a]**: cattle manure 2500 ([kg/t FM]: 5 N, 3 P_2O_5, 7 K_2O); pig manure 2000 ([kg/t FM]: 6 N, 4 P_2O_5, 3 K_2O); pig slurry 4000 ([kg/t FM]: 3.6 N, 1.7 P_2O_5, 2.4 K_2O); cattle slurry 1800 ([kg/t FM]: 2.9 N, 1.2 P_2O_5, 3.1 K_2O); Chicken manure 580 ([kg/t FM]: 13 N, 8 P_2O_5, 7 K_2O); Sulfoprill ([kg/100 kg]: 14 S); Patentkali ([kg/100 kg]: 30 K_2O); **available in crop rotation [kg/ha/a]**: 97 N total, 55 P_2O_5, 90 K_2O, 28 S;

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Machinery

Tractors	Power (HP)
Fendt 724	240
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Fendt 728	280
Fendt 313	130

Cultivation	Working width m
Plough	
Cameleon seed drill and Hoe	8
Horsch Express seed drill with rotary harrow	3
Lemken Zirkon rotary harrow	6
Köckerling Vario cultivator	4
Celli Tiger rotary tiller (to cut the clover grass pasture before ploughing)	3

Crop protection	
Treffler harroweeder	12
Horsch harroweeder	12

Fertilisation
Liquid manure Application by contractor with NIR Sensor on tanker or umbilical (with a pipeline)
Manuer spreader (hired)
Fertilizer spreader
Lime spreader

Harvest	
Claas Lexion 750	9

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