Table S1. Forms and doses of mineral fertilizers and pig slurry (PS) according to the fertilizer treatments applied in Pernolec. Cumulative doses for the entire three-year crop rotation.

	N (kg ha^{-1})		Pig slurry		P (kg ha^{-1})	K (kg ha^{-1})
	AS	CAN	t ha^{-1}	N (kg ha^{-1})		
Control	0	0	0	0	0	0
PK	0	0	0	0	72.6	249
NPK	100	30	0	0	72.6	249
PS1	0	30	35	185	0	0
PS1+PK	0	30	35	185	72.6	249
PS1+NPK	100	60	35	185	72.6	249
PS2	0	30	52	270	0	0
PS2+PK	0	30	52	270	72.6	249
PS2+NPK	100	60	52	270	72.6	249
PS3	0	30	69	355	0	0
PS3+PK	0	30	69	355	72.6	249
PS3+NPK	100	60	69	355	72.6	249
NPK E1	160	100	0	0	55.5	84.2
NPK E2	160	170	0	0	70.5	109.2
NPK E3	230	170	0	0	85.5	134.2
Total	950	830	468	2430	792.3	2319.6

Note: AS—ammonium sulphate; CAN—calcium ammonium nitrate; N (kg ha^{-1}) in the PS column represents the content of N applied in PS.

Table S2. Forms and doses of mineral fertilizers and pig slurry (PS) according to the fertilizer treatments applied in Kostelec. Cumulative doses for the entire three-year crop rotation.

	N (kg ha^{-1})		Pig slurry		P (kg ha^{-1})	K (kg ha^{-1})
	AS	CAN	t ha^{-1}	N (kg ha^{-1})		
Control	0	0	0	0	0	0
PK	0	0	0	0	72.6	249
NPK	100	60	0	0	72.6	249
PS1	0	30	40	170	0	0
PS1+PK	0	30	40	170	72.6	249
PS1+NPK	100	90	40	170	72.6	249
PS2	0	30	60	240	0	0
PS2+PK	0	30	60	240	72.6	249
PS2+NPK	100	90	60	240	72.6	249
PS3	0	30	80	310	0	0
PS3+PK	0	30	80	310	72.6	249
PS3+NPK	100	90	80	310	72.6	249
NPK E1	120	160	0	0	58	97.6
NPK E2	120	160	0	0	76	125.6
NPK E3	120	160	0	0	94	153.6
Total	760	990	540	2160	808.8	2368.8

Note: AS—ammonium sulphate; CAN—calcium ammonium nitrate; N (kg ha^{-1}) in the PS column represents the content of N applied in PS.

Table S3. The long-term mean precipitation (Mean; 1977–2016 for Pernolec; 1982–2016 for Kostelec; mm) and the sum of precipitation (mm) in individual months in 2017 and 2020 in Pernolec and Kostelec. The comparison between long-term mean and actual (2017, 2020) precipitation was done according to [57].

	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.
Pernolec												
Mean	38.3	28.2	37.5	34.6	52.2	61.2	69.3	60.2	45.1	41.9	43.2	43.1
2017	11.8	3.5	44.0	37.5	24.9	26.5	52.3	67.8	29.5	50.9	59.9	14.4
2020	14.7	87.9	27.7	14.5	44.0	94.6	15.7	144.1	29.6	37.7	7.1	26.3
Kostelec												
Mean	56.2	41.3	45.9	39.9	69.6	78.0	97.6	75.6	57.4	42.0	47.4	57.6
2017	45.6	35.2	38.8	75.8	45.0	91.3	131.5	35.5	63.7	111.0	49.9	50.8
2020	25.6	100.8	33.2	20.1	62.5	333.7	58.2	84.8	88.7	96.0	34.1	23.4

	Very dry
	Dry
	Normal
	Wet
	Very wet
	Extraordinary wet

Table S4. The long-term mean temperature (Mean; 1977–2016 for Pernolec; 1982–2016 for Kostelec; °C) and the average temperature (°C) in individual months in 2017 and 2020 in Pernolec and Kostelec. The comparison between the long-term mean and actual (2017, 2020) temperature was done according to [57].

	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.
Pernolec												
Mean	−1.8	−1.1	2.7	7.0	12.1	15.4	17.2	16.8	12.3	7.3	2.7	−0.2
2017	−6.5	1.2	5.3	6.9	13.9	18.5	18.9	18.3	10.9	9.2	3.1	0.5
2020	0.5	3.4	3.4	9.0	11.5	16.8	18.5	19.1	13.3	8.4	3.4	1.1
Kostelec												
Mean	−1.5	−0.6	3.3	8.9	14.0	16.7	18.7	18.2	13.6	8.7	3.8	−0.3
2017	−5.2	1.7	6.3	7.7	15.2	18.7	18.9	19.9	12.4	9.9	4.4	1.3
2020	0.5	4.1	4.8	10.2	11.8	17.4	18.6	19.9	14.8	10.2	4.6	3.0

	Very Cold
	Cold
	Normal
	Warm
	Very Warm
	Extraordinary warm

Table S5. The effect of the year (2017, 2020) and fertilizer treatment on FP grain and straw yield (t ha^{-1}) in Kostelec.

Fertilizer treatment	Grain yield (t ha^{-1})		Mean	Straw yield (t ha^{-1})		Mean
	2017	2020		2017	2020	
Control	3.2	2.8	3.0±0.2	2.8	3.2	3.0±0.2
PK	3.1	2.7	2.9±0.2	2.3	3.5	2.9±0.6
NPK	3.4	3.2	3.3±0.1	2.9	3.5	3.2±0.3
PS1	2.8	2.3	2.5±0.3	2.1	3.5	2.8±0.7
PS1+PK	2.8	3.3	3.0±0.3	2.3	3.5	2.9±0.6
PS1+NPK	3.4	2.6	3.0±0.4	2.6	3.0	2.8±0.2
PS2	3.5	3.0	3.3±0.3	2.6	3.6	3.1±0.5
PS2+PK	3.0	3.2	3.1±0.1	2.4	3.2	2.8±0.4
PS2+NPK	3.6	3.1	3.4±0.2	2.8	3.5	3.2±0.4
PS3	3.1	3.2	3.1±0.1	2.4	3.5	2.9±0.5
PS3+PK	3.0	3.2	3.1±0.1	2.3	3.5	2.9±0.6
PS3+NPK	3.7	2.8	3.3±0.5	3.2	3.3	3.2±0.1
NPK E1	3.6	3.2	3.4±0.2	3.1	3.1	3.1±0.1
NPK E2	3.2	2.5	2.9±0.4	2.7	3.0	2.8±0.1
NPK E3	3.2	3.0	3.1±0.1	2.8	3.2	3.0±0.2
Mean	3.3 ± 0.1 b	2.9 ± 0.1 a		2.6 ± 0.1 a	3.3 ± 0.1 b	

Mean values (±SE) followed by the same letter (a horizontally—comparing the mean values of the year) are not statistically significantly different.