

Evaluating Gas Emissions from Different Feed Cropping Systems in the North China Plain: a Two-Year Field Measurement

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Table S1. DM productions and the PFP_{DM} (mean \pm standard deviation) of different rotation systems during the experimental period.

Rotations	Type of Crops	Individual crop (kg ha ⁻¹ season ⁻¹)		Total (kg ha ⁻¹ yr ⁻¹)	
		2015-2016	2016-2017	2015-2016	2016-2017
WW-SuM	Winter wheat	15298 \pm 960	15296 \pm 960	27125 \pm 905 b	31731 \pm 1630 b
	Summer maize	11827 \pm 1207	16435 \pm 1158		
Tr-SuM	Triticale	8132 \pm 156	8252 \pm 103	20178 \pm 3235 c	25667 \pm 2573 c
	Summer maize	12046 \pm 3143	17415 \pm 2514		
Tr-SpM	Triticale	3912 \pm 357	5620 \pm 276	19643 \pm 1845 c	20845 \pm 402 d
	Spring maize	15731 \pm 1686	15225 \pm 143		
Tr-DFM	Triticale	4062 \pm 195	8948 \pm 204	31012 \pm 777 a	35628 \pm 1443 a
	Forage maize #1	13877 \pm 853	18825 \pm 1134		
	Forage maize #2	13073 \pm 95	7855 \pm 335		
DFM	Forage maize #1	12556 \pm 1671	16672 \pm 393	20452 \pm 1788 c	23032 \pm 2336 cd
	Forage maize #2	7896 \pm 1161	6360 \pm 1949		

WW, winter wheat; Tr, triticale; SuM, summer maize; SpM, spring maize; DFM, double maize cropping system. Different letters in one column indicate significant difference ($P < 0.05$).

Table S2. CP productions and the PFP_{CP} (mean \pm standard deviation) of different rotation systems during experimental period.

Rotations	Type of Crops	Individual crop (kg ha ⁻¹ season ⁻¹)		Total (kg ha ⁻¹ season ⁻¹)	
		2015-2016	2016-2017	2015-2016	2016-2017
WW-SuM	Winter wheat	1165 \pm 134	1030 \pm 54	2338 \pm 76 a	2265 \pm 119 b
	Summer maize	1173 \pm 124	1235 \pm 65		
Tr-SuM	Triticale	546 \pm 7	413 \pm 21	1800 \pm 305 b	1923 \pm 160 c
	Summer maize	1254 \pm 298	1510 \pm 175		
Tr-SpM	Triticale	361 \pm 20	333 \pm 29	2158 \pm 255 ab	2159 \pm 195 bc
	Spring maize	1797 \pm 237	1826 \pm 171		
Tr-DFM	Triticale	367 \pm 7	415 \pm 11	2529 \pm 189 a	2629 \pm 80 a
	Forage maize #1	1414 \pm 190	1500 \pm 45		
	Forage maize #2	748 \pm 8	714 \pm 25		
DFM	Forage maize #1	1342 \pm 125	1480 \pm 132	1713 \pm 114 b	1718 \pm 104 c
	Forage maize #2	371 \pm 14	310 \pm 10		

WW, winter wheat; Tr, triticale; SuM, summer maize; SpM, spring maize; DFM, double maize cropping system. Different letters in one column indicate significant difference ($P < 0.05$).

Table S3. GHG emissions (mean \pm standard deviation) of N₂O, CH₄, and indirect N₂O from the deposition of emitted NH₃ of different rotation systems during the experimental period.

Rotations	GHG_N ₂ O (kg ha ⁻¹ yr ⁻¹)	GHG_CH ₄ (kg ha ⁻¹ yr ⁻¹)	GHG direct (kg ha ⁻¹ yr ⁻¹)	GHG_NH ₃ (kg ha ⁻¹ yr ⁻¹)	Total GHG (kg ha ⁻¹ yr ⁻¹)
WW-SuM	1579 \pm 47.7 b	-58.8 \pm 11.8 a	1521 \pm 59 b	52.95 \pm 4.5 a	1574 \pm 64 b
Tr-SuM	1500 \pm 63.6 b	-70 \pm 10.6 a	1430 \pm 74 b	50.27 \pm 6.5 a	1480 \pm 81 b
Tr-SpM	1407 \pm 164.3 b	-58.8 \pm 16.5 a	1348 \pm 181 b	51.22 \pm 10.2 a	1400 \pm 191 b
Tr-DFM	1900 \pm 259.7 a	-79.8 \pm 14.3 a	1820 \pm 274 a	62.99 \pm 7.1 a	1883 \pm 281 a
DFM	1428 \pm 92.8 b	-64.68 \pm 16.8 a	1364 \pm 110 b	35.59 \pm 4.9 b	1399 \pm 114 b

GHG, greenhouse gas in terms of CO₂-equivalent; WW, winter wheat; Tr, triticale; SuM, summer maize; SpM, spring maize; DFM, double maize cropping system. Different letters in one column indicate significant difference (P<0.05).