

Table S1 PCR primer pairs and thermal programs used in this study

Target gene	Sequence (5'-3') of primer pairs	Thermal program	Reference
<i>amoA</i> (T-RFLP)		5 min at 94°C, 30-35 cycles (depend on the concentration of template) of 60 s at 94°C, 90 s at 60°C, and 90 s at 72°C, and a final cycle consisting of 90 s at 60°C and 10 min at 72°C	[1]
<i>amoA</i> (Clone library)	<i>amoA</i> -F: GGGGTTTCTACTGGTGGT <i>amoA</i> -R: CCCCTCKGSAAAGCCTTCTTC	5 min at 94°C, 35 cycles of 60 s at 94°C, 90 s at 60°C, and 90 s at 72°C, and a final cycle consisting of 90 s at 60°C and 10 min at 72°C.	[1]
<i>amoA</i> (qPCR)		2 min at 95°C, followed by 40 cycles of 10 s at 94°C, 10 s at 55°C, and 30 s at 72°C.	[2]
<i>nosZ</i> (T-RFLP)	<i>nosZ</i> -F: CGYTGTTTCMTCGACAGCCAG <i>nosZ</i> -R: CATGTGCAGNGCRTGGCAGAA	3 min at 94°C, 1 cycle of 20 s at 94°C, 30 s at 65°C, 30 s at 72°C; 2 cycles of 20 s at 94°C, 30 s at 62°C, 35 s at 72°C; 3 cycles of 20 s at 94°C, 30 s at 59°C, 40 s at 72°C; 4 cycles of 20 s at 94°C, 30 s at 56°C, 45 s at 72°C; 5 cycles of 20 s at 94°C, 30 s at 53°C, 50 s at 72°C; 30 cycles of 20 s at 94°C, 45 s at 50°C, 1 min at 72°C; finally, 10 min at 72°C.	[3]
<i>nosZ</i> (Clone library)	<i>nosZ</i> -F: CGCRACGGCAASAAGGTSMSSTG <i>nosZ</i> -R: CAKRTGCAKSGCRTGGCAGAA	5 min at 95°C, 35 cycles of 30 s at 95°C, 30 s at 60°C, and 30 s at 72°C, followed by 10 min at 72°C.	
<i>nosZ</i> (qPCR)		2 min at 95°C, 40 cycles of 10 s at 95°C, 40 s at 60°C.	[4]
16S rRNA (qPCR)	341F: CCTACGGGAGGCAGCAG 518R: ATTACCGCGGCTGCTGG	2 min at 95°C, 40 cycles of 10 s at 95°C, 40 s at 60°C.	[5]

## References

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