Table S1: Properties of the amendments applied in the 2011 and 2012 seasons.

	2011 Biosolid	2012 Sewage sludge
pH	8.2	7.9
Sulfur (ppm)	4720	1755
Dry matter (%)	32.9	27.2
Total N (%)	0.9	1.54
NH4-N (ppm)	1539	2592
Total P (%)	0.83	0.54
Phosphate (%)	1.91	1.24
Total K (%)	0.13	0.04
Potash (%)	0.16	0.05
OM (%)	14.4	21.5
C:N ratio	9:1	8:1
Na (%)	0.06	0.04
Al (ppm)	8927	566
B (ppm)	12.2	3.3
Ca (%)	1.89	0.6
Cu (ppm)	170	94
Fe (ppm)	23207	10298
Mg (ppm)	0.48	0.09
Mn (ppm)	137	71
Zn (ppm)	260	124

Table S2: Dates (in Julian day) of biosolids (2011) and sewage sludge (2012) applications, planting date and harvest date for the indicated crops. The number of days between application of the biosolids and crop harvest are indicated, as well as irrigation schedule.

	2011 APPLICATION TO HARVEST SCHEDULE			
APPLICATION	**PLANT DATE (days after application)**	**IRRIGATION (wc=Water Can) (oh=Overhead)**	**HARVEST DATE (days after application)**	**DAYS TO HARVEST (days after application)**
June 16th 2011 (day 167)	June 17th (day 168) SOIL SAMPLES Day 0 (167) Day 7 (174) Day 30 (197) Harvest (262)	June 20 (day 171) wc-drench June 28 (day 179) wc-drench July 8 (day 189) wc-drench July 15 (day 197) oh-13mm July 18 (day 200) oh-20mm July 22 (day 204) oh-20mm	Sept 19th (day262)	Tomato (95d)
	June 17th (day 168) SOIL SAMPLES Day 0 (167) Day 7 (174) Day 30 (197) Harvest (262)	June 20 (day 171) wc-drench June 28 (day 179) wc-drench July 15 (day 197) oh-13mm July 18 (day 200) oh-20mm July 22 (day 204) oh-20mm	Sept 19th (day262)	Pepper (95d)
	June 20th (day 171) SOIL SAMPLES Day 0 (167) Day 7 (174) Day 30 (197) Harvest (297)	June 30 (day 182) wc-drench July 11(day 193) wc-drench July 15 (day 197) oh-13mm July 18 (day 200) oh-20mm July 22 (day 204) oh-20mm	Oct. 24th (day 297)	Carrot (130d)
	July 5th (day 186) SOIL SAMPLES Day 0 (167) Day 7 (174) Day 30 (197) Harvest (276)	July 8 (day 189) wc-drench July 11(day 193) wc-drench July 15 (day 197) oh-13mm July 18 (day 200) oh-20mm July 22 (day 204) oh-20mm	Oct. 3rd (day 276)	Cucumber (109d)
	Sept. 21 (day 264) SOIL SAMPLES Day 0 (167) Day 7 (174) Day 30 (197) Harvest (304)		Oct. 31st (day 304)	Radish (137d)

	2012 APPLICATION TO HARVEST SCHEDULE			
APPLICATION	**PLANT DATE (days after application)**	**IRRIGATION (wc=Water Can) (oh=Overhead)**	**HARVEST DATE (days after application)**	**DAYS TO HARVEST (days after application)**
May 17th 2012 (day 138)	June 8th (day 160) SOIL SAMPLES Day 0 (138) Day 7 (145) Day 30 (166) Harvest (242)	June 11 (day 163) wc-drench June 14 (day 166) wc-drench July 13 (day 195) oh-20mm July 17 (day 199) oh-20mm July 19 (day 201) oh-20mm July 24 (day 206) oh-25mm Aug. 3 (day 216) oh-25mm Aug. 9 (day 222) oh-25mm	Aug. 29th (day242)	Tomato (104d)
	June 8th (day 160)	July 13 (day 195) oh-20mm July 17 (day 199) oh-20mm	Sept 17th (day261)	Carrot (123d)

	SOIL SAMPLES Day 0 (138) Day 7 (145) Day 30 (166) Harvest (261)	July 19 (day 201) oh-20mm July 24 (day 206) oh-25mm Aug. 3 (day 216) oh-25mm Aug. 9 (day 222) oh-25mm		
	June 8th (day 160) SOIL SAMPLES Day 0 (138) Day 7 (145) Day 30 (166) Harvest (228)	July 13 (day 195) oh-20mm July 17 (day 199) oh-20mm July 19 (day 201) oh-20mm July 24 (day 206) oh-25mm Aug. 3 (day 216) oh-25mm Aug. 9 (day 222) oh-25mm	Aug 15th (day 228)	Lettuce (90d)
	Aug. 24th (day 237) SOIL SAMPLES Day 0 (138) Day 7 (145) Day 30 (166) Harvest (268)		Sept. 24rd (day 268)	Radish (130d)

	2013 APPLICATION TO HARVEST SCHEDULE			
APPLICATION	**PLANT DATE (days after application)**	**IRRIGATION (wc=Water Can) (oh=Overhead)**	**HARVEST DATE (days after application)**	**DAYS TO HARVEST (days after application)**
May 17th 2012 (day 138)	May 9th (357) SOIL SAMPLES Day 350 (May 2 2013) Day 385 (June 6 2013) Harvest (439)		July 30th (439)	Lettuce (439d)
	May 9th (357) SOIL SAMPLES Day 350 (May 2 2013) Day 385 (June 6 2013) Harvest (397)		Jun 18th (397)	Radish (397d)
	Jul 16th (425) SOIL SAMPLES Day 350 (May 2 2013) Day 385 (June 6 2013) Harvest (530)		Oct 29th (530)	Carrot (530d)

Supplementary Table 3. (a) Primers used for PCR detection of gene targets; (b) Sequence validation of the expected PCR product; (c) primers and probes used for quantitative PCR and (d) qPCR cycling conditions

Table 3a

Primer gene target name	**Target, or target class**	**Annealing temperature**	**Reference**
Incompatibility			
IncA/C	Incompatibility group A/C	60	Johnson *et al.*, 2007
IncB/O	Incompatibility group B/O	60	Johnson *et al.*, 2007
IncFIA	Incompatibility group FIA	60	Johnson *et al.*, 2007
IncFIIA	Incompatibility group FIIA	60	Johnson *et al.*, 2007
IncFIB	Incompatibility group FIB	60	Johnson *et al.*, 2007
IncFIC	Incompatibility group F1C	60	Johnson *et al.*, 2007
IncFrep	Incompatibility group Frep	60	Johnson *et al.*, 2007
IncHI1	Incompatibility group HI1	60	Johnson *et al.*, 2007
IncHI2	Incompatibility group HI2	60	Johnson *et al.*, 2007
IncI1	Incompatibility group I1	60	Johnson *et al.*, 2007
IncK/B	Incompatibility group K/B	60	Johnson *et al.*, 2007
IncL/M	Incompatibility group L/M	60	Johnson *et al.*, 2007
IncN	Incompatibility group N	60	Johnson *et al.*, 2007
IncN *kik*A	Incompatibility group N	55	Gotz *et al.*,1996
IncN *ori*T	Incompatibility group N	49	Gotz *et al.*, 1996
IncN *rep*	Incompatibility group N	55	Gotz *et al.*, 1996
IncP *kor*A	Incompatibility group P	52	Gotz *et al.*,1996
IncP *ori*T	Incompatibility group P	57	Gotz *et al.*,1996
IncP *tra*G	Incompatibility group P	63	Gotz *et al.*,1996
IncP *trf*A1	Incompatibility group P	57	Gotz *et al.*,1996
IncP *trf*A2	Incompatibility group P	57	Gotz *et al.*, 1996
IncQ *rep*B	Incompatibility group Q	62	Gotz *et al.*, 1996
IncQ *ori*T	Incompatibility group Q	57	Gotz *et al.*, 1996
IncQ *ori*V	Incompatibility group Q	57	Gotz *et al.*, 1996
IncT	Incompatibility group T	60	Johnson *et al.*, 2007
IncW	Incompatibility group W	60	Johnson *et al.*, 2007
IncW *ori*T	Incompatibility group W	51	Gotz *et al.*, 1996
IncW *ori*V	Incompatibility group W	58	Gotz *et al.*, 1996
IncW *trw*AB	Incompatibility group W	57	Gotz *et al.*, 1996
IncX	Incompatibility group X	60	Johnson *et al.*, 2007
IncY	Incompatibility group Y	60	Johnson *et al.*, 2007
Integrase			
int1	Class 1 integrase	60	Shibata *et al.*, 2003
int2	Class 2 integrase	60	Goldstein *et al.*, 2001
int3	Class 3 integrase	60	Goldstein *et al.*, 2001
Antibiotic Resistance			
bla_{CARB-4}	Beta Lactamase resistance CARB	55	Bert *et al.*, 2002
bla_{CTX-M}	Beta lactamase resistance CTX-M	48	Hartmann *et al.*, 2012

bla$_{CTX-M}$*	Beta lactamase resistance CTX-M	55	Knapp *et al.* 2010
bla$_{GIM-1}$	Beta lactamase resistance GIM-1	53	Mendes *et al.*, 2007
bla$_{IMP}$*	Beta lactamase resistance IMP	52	Poirel *et al.*, 2011
bla$_{IMP-1}$	Beta lactamase resistance IMP-1	53	Mendes *et al.*, 2007
bla$_{KPC-m}$*	Beta lactamase resistance KPC	52	Poirel *et al.*, 2011
bla$_{NDM-1}$*	Beta lactamase resistance NDM	52	Poirel *et al.*, 2011
bla $_{OXA-18}$	Beta lactamase resistance OXA-18	55	Bert *et al.*, 2002
bla$_{OXA-20}$	Beta lactamase resistance OXA-20	55	Bert *et al.*, 2002
bla$_{OXA-48}$*	Beta lactamase resistance OXA-48	52	Poirel *et al.*, 2011
bla$_{OXAV}$	Beta lactamase resistance OXA-5	55	Bert *et al.*, 2002
bla$_{OXA1}$	Beta lactamase resistance OXAgroup I (OXA-10 group)	55	Bert *et al.*, 2002
bla$_{OXAII}$	Beta lactamase resistance OXAgroup II (OXA-2 group)	55	Bert *et al.*, 2002
bla$_{OXAIII}$	Beta lactamase resistance OXAgroup III (OXA-1 group)	55	Bert *et al.*, 2002
bla$_{LCR-1}$	Beta lactamase resistance OXA-LCR-1	55	Bert *et al.*, 2002
bla$_{PSE}$	Beta lactamase PSE group (PSE-1, PSE-4,CARB-3)	55	Bert *et al.*, 2002
bla$_{SHV}$	Beta lactamase resistance SHV	55	Knapp *et al.*, 2010
bla$_{SPM-1}$	Beta lactamase resistance SPM-1	53	Mendes *et al.*, 2007
bla$_{TEM}$*	Beta lactamase resistance TEM	55	Reinthaler *et al.*, 2010
bla$_{VIM}$*	Beta lactamase resistance VIM	52	Poirel *et al.*, 2011
bla$_{VIMgen-2}$	Beta lactamase resistance VIM-2	53	Mendes *et al.*, 2007
erm(A)	erythromycin resistance locus A	52	Lina *et al.*, 1999
msr(A)	erythromycin resistance locus A	50	Lina *et al.*, 1999
erm(B)	erythromycin resistance locus B	60	Knapp *et al.*, 2010
msr(B)	erythromycin resistance locus B	50	Lina *et al.*, 1999
erm(C)	erythromycin resistance locus C	60	Knapp *et al.*, 2010
erm(E)	erythromycin resistance lucus E	60	Knapp *et al.*, 2010
erm(F)	erythromycin resistance lucus F	60	Knapp *et al.*, 2010
fos(A-2)	Fosfomycin resistance gene	53	Xu *et al.*, 2011
qnr(A)	Quinolone resistance gene locus A	53	Robicsek *et al.*, 2006
qnr(B)	Quinolone resistance gene locus B	53	Robicsek *et al.*, 2006
qnr(S)	Quinolone resistance gene locus S	53	Robicsek *et al.*, 2006
aad(A)	Streptomycin resistance gene	64†	Boerlin *et al.*, 2005
str(A)	Streptomycin resistance gene locus A	55	Boerlin *et al.*, 2005
str(B)	Streptomycin resistance gene locus B	55	Boerlin *et al.*, 2005
sul1	Sulfonamide resistance gene 1	53	Maynard *et al.*, 2003
sul3	Sulfonamide resistance gene 3	51	Boerlin *et al.*, 2005
tet(A)	tetracycline resistance gene A	60†	Boerlin *et al.*, 2005
tet(B)	tetracycline resistance gene B	60†	Boerlin *et al.*, 2005
tet(B/P)	tetracycline resistance gene BP	46	Aminov *et al.*, 2001
tet(M)	tetracycline resistance gene M	55	Aminov *et al.*, 2001
tet(O)	tetracycline resistance gene O	60	Aminov *et al.*, 2001
otr(A)	tetracycline resistance gene OtrA	66	Aminov *et al.*, 2001
tet(Q)	tetracycline resistance gene Q	63	Aminov *et al.*, 2001
tet(S)	tetracycline resistance gene S	50	Aminov *et al.*, 2001

tet(T)	tetracycline resistance gene T	46	Aminov *et al.*, 2001
vga	type A streptogramin resistance gene	54	Lina *et al.*, 1999
vat(B)	type A streptogramin resistance gene	52	Lina *et al.*, 1999
vgb	type B streptogramin resistance gene	53	Lina *et al.*, 1999
van(A)	Vancomycin resistance gene A	58	Kariyama *et al.*, 2000
van(B)	Vancomycin resistance gene B	58	Elsayed *et al.*, 2001
van(C1)	Vancomycin resistance gene C1	54	Kariyama *et al.*, 2000
van(C2/C3)	Vancomycin resistance gene C2/C3	58	Kariyama *et al.*, 2000

†Annealing temperature used was different than in original publications, *Primer pair used only in 2012.

References

1. **Aminov, R. I., N. Garrigues-Jeanjean, and R. I. Mackie.** 2001. Molecular ecology of tetracycline resistance: development and validation of primers for detection of tetracycline resistance genes encoding ribosomal protection proteins. Appl. Environ. Microbiol. **67:**22-32.
2. **Bert, F., C. Branger, and N. Lambert-Zechovsky.** 2002. Identification of PSE and OXA beta-lactamase genes in *Pseudomonas aeruginosa* using PCR-restriction fragment length polymorphism. J. Antimicrob. Chemother. **50:**11-18.
3. **Boerlin, P., R. Travis, C. L. Gyles, R. Reid-Smith, N. Janecko, H. Lim, V. Nicholson, S. A. McEwen, R. Friendship, and M. Archambault.** 2005. Antimicrobial resistance and virulence genes of *Escherichia coli* isolates from swine in Ontario. Appl. Environ. Microbiol. **71:**6753-6761.
4. **Elsayed, S., N. Hamilton, D. Boyd, and M. Mulvey.** 2001. Improved primer design for multiplex PCR analysis of vancomycin-resistant *Enterococcus* spp. J. Clin. Microbiol. **39:**2367-2368.
5. **Goldstein, C., M. D. Lee, S. Sanchez, C. Hudson, B. Phillips, B. Register, M. Grady, C. Liebert, A. O. Summers, D. G. White, and J. J. Maurer.** 2001. Incidence of class 1 and 2 integrases in clinical and commensal bacteria from livestock, companion animals, and exotics. Antimicrob. Agents Chemother. **45:**723-726.
6. **Gotz, A., R. Pukall, E. Smit, E. Tietze, R. Prager, H. Tschape, J. D. van Elsas, and K. Smalla.** 1996. Detection and characterization of broad-host-range plasmids in environmental bacteria by PCR. Appl. Environ. Microbiol. **62:**2621-2628.
7. **Hartmann, A., A. Locatelli, L. Amoureux, G. Depret, C. Jolivet, E. Gueneau, and C. Neuwirth.** 2012. Occurrence of CTX-M Producing *Escherichia coli* in Soils, Cattle, and Farm Environment in France (Burgundy Region). Front. Microbiol. **3:**83.
8. **Johnson, T. J., Y. M. Wannemuehler, S. J. Johnson, C. M. Logue, D. G. White, C. Doetkott, and L. K. Nolan.** 2007. Plasmid replicon typing of commensal and pathogenic *Escherichia coli* isolates. Appl. Environ. Microbiol. **73:**1976-1983.
9. **Kariyama, R., R. Mitsuhata, J. W. Chow, D. B. Clewell, and H. Kumon.** 2000. Simple and reliable multiplex PCR assay for surveillance isolates of vancomycin-resistant enterococci. J. Clin. Microbiol. **38:**3092-3095.
10. **Knapp, C. W., J. Dolfing, P. A. Ehlert, and D. W. Graham.** 2010. Evidence of increasing antibiotic resistance gene abundances in archived soils since 1940. Environ. Sci. Technol. **44:**580-587.
11. **Lina, G., A. Quaglia, M. E. Reverdy, R. Leclercq, F. Vandenesch, and J. Etienne.** 1999. Distribution of genes encoding resistance to macrolides, lincosamides, and streptogramins among staphylococci. Antimicrob. Agents Chemother. **43:**1062-1066.
12. **Maynard, C., J. M. Fairbrother, S. Bekal, F. Sanschagrin, R. C. Levesque, R. Brousseau, L. Masson, S. Lariviere, and J. Harel.** 2003. Antimicrobial resistance genes in enterotoxigenic *Escherichia coli* O149:K91 isolates obtained over a 23-year period from pigs. Antimicrob. Agents Chemother. **47:**3214-3221.
13. **Mendes, R. E., K. A. Kiyota, J. Monteiro, M. Castanheira, S. S. Andrade, A. C. Gales, A. C. Pignatari, and S. Tufik.** 2007. Rapid detection and identification of metallo-beta-lactamase-encoding genes by multiplex real-time PCR assay and melt curve analysis. J. Clin. Microbiol. **45:**544-547.
14. **Poirel, L., T. R. Walsh, V. Cuvillier, and P. Nordmann.** 2011. Multiplex PCR for detection of acquired carbapenemase genes. Diagn. Microbiol. Infect. Dis. **70:**119-123.
15. **Reinthaler, F. F., G. Feierl, H. Galler, D. Haas, E. Leitner, F. Mascher, A. Melkes, J. Posch, I. Winter, G. Zarfel, and E. Marth.** 2010. ESBL-producing *E. coli* in Austrian sewage sludge. Water Res. **44:**1981-1985.

16. **Robicsek, A., J. Strahilevitz, D. F. Sahm, G. A. Jacoby, and D. C. Hooper.** 2006. *qnr* prevalence in ceftazidime-resistant *Enterobacteriaceae* isolates from the United States. Antimicrob. Agents Chemother. **50:**2872-2874.
17. **Shibata, N., Y. Doi, K. Yamane, T. Yagi, H. Kurokawa, K. Shibayama, H. Kato, K. Kai, and Y. Arakawa.** 2003. PCR typing of genetic determinants for metallo-beta-lactamases and integrases carried by gram-negative bacteria isolated in Japan, with focus on the class 3 integron. J. Clin. Microbiol. **41:**5407-5413.
18. **Xu, H., V. Miao, W. Kwong, R. Xia, and J. Davies.** 2011. Identification of a novel fosfomycin resistance gene (*fosA2*) in *Enterobacter cloacae* from the Salmon River, Canada. Lett. Appl. Microbiol. **52:**427-429.

Supplementary Table 3b. Sequence validation of PCR products. Targets annotated with an asterisk were validated in the present study, otherwise targets were validated previously (Marti et al. 2013).

Target	Sequencing result	Accession number of closest match	% of similarity
IncA/C*	GAAACTCGACGTTATCAAAGACTCACCGCAAATGAGCCTGTTTGAGATCATTGAATCTCCGGCCAAGAAAGACGACTACTCCAACACAATCGAGATCTACGATGCGTTACCTAAGTACATTTGGGACCAAAAGCGTGAGCACGAAGACCTGTCCAACGCCGTAGTGAC GCGACAATGCTCCATCAGAGGCCAGCAGTTCACGGTGAAGGTGAAACCAGCCATCATCGAGAAGGACGACGGCAGAACCGTGCTGATCTACGCGGGGCAGCGAGAGGAAATCCTTGAGGATGCTCTACGCAAGCTCGCAGTAAACGGGAAGGGCCATATCATAGAAG GCAAGGCTGGGGTCATGTTCCACTCTGTACGAACTCCAGAAGGAGTTCTCGAAGATGGGGCACGGGTACACCCTGACAGAGATC	FJ705807	99
IncF1B	GGAGTTCTGACACACGATTTTCTGTTTATTCTTTTACTGTCCACAGGCTGGAGGCTTTCTGGAAAACGAAAATTCAGACATCAAAAAACTGTTCGGCGAGGTGGATAAGTCGTCCGGTGAGCTGGTGACACTGACACCAAACAATAACAACACCGTACAACCTGCGGCG CTGATGCGTCTGGGCGTCTTTGTACCGACCCTTAAGTCACTGAAGAACAGTAAAAAAAAATACACTGTCACGCACCGATGCCACGGAAGAACTGACGCGTCTTTCTCTGGCCCGTGCAGAAGGATTCGATAAGGTTGAGATCACCGGCCCCCGGCTGGATATGGATAACG ATTTCAAGACCTGGGTGGGGATCATTCATTCCTTTGCCCGCCATAACGTGATTGGTGACAAAGTTGAACTGCCTTTTGTTGAGTTTGCAAAACTGTGTGGTATACCTTCAAGCCAGTCATCCCGCAGGCTGCGTGAGCGCATCAGCCCTTCCCTGAAGCGCATTGCCGGT ACCGTGATCTCGTTTTCCCGTACCGATGAGAAGCACACCCGGGAATACATCACCCATCTGGTACAGTCAGCCTACTACGATACTGAACGGGATATTGTTCAGTTACAGGCTGATCCCCGCCTGTTTGAACTGTACCAGTTTGACAGAAAGGTCCTTCCTCAGCTTAAGGC GATTAATGCCCTGAAGCGACGGGAG	FJ876827	99
IncN*	GTTTCAACTCTGCCAAGTTCTTCTGTTGGGACTCCGGCAAAAGGAAACGGTCATTTAACCAAGCATGAGTAGTAACCCATAAGCCTGAAGATTTGAATTTGAGCAAGACTTTCATAAAGGCGGATCGTCCGTGGATTTCGAAGACTGCCACAATCGCGGAGCGAGTAGG TGGTGAACTGGTTCGTCAGGCCGTAAATGTACCGCAGGAGTTTATGGTTAAATTCGATTTCCCAGATACCACGAGCTGATCGGCTGCCAGCCTCTGTTAGCCAGGGGCGCGCGACGCAGTCAAAACTCCCTTCTTTCGGGTAAAAGATTACCGCAGAACGGCTTAACTC AAACACGCCTTCTTTAACATCCTTGATAGCCTGGTTACGGCTTACCTGAAAAATTTGCTCATAGTCAGCCACCTTTACTTGAAAGTAGAGTCACCGAGTACAGCCATCTCATCATCATCTTCGCTTACTGAAGCTGTGAAATACGTCTGCATAAGTCATAACCAGAGAA CGCGCTTTGCTTTTAGCGAGAGGTAGTAAGCAGCTTCGGTAAGCTCGTTAGAC	FR850039	99
IncP *kor*A	ATGAAGAAACGGCTNACCGAAGCCCAATTCCAGGTGGCTATCAAGGACTGGAGATCGGACAGCAGACCATCGACATAGCGCACGGCGTGCTAGTCGATGGCCGGCCACAGGCGGAATTTGTCTCATCTCTGGGGCTGACCAAGGGGGCAGTGTCCCAGGCGGTCAA TCGCGTCTGGGTAGCAGCGGGGAAACAGCTCCCCGAGGGATTCGAGCGGGTGACAGCGGTGCTGCCCGAGCATCAAGCGTTCATCGTCAAGAAGTGGGAAGCAGACGCCAAGANAAAACAGGAA		91
IncP *ori*T	CAGCCTCGCAGAGCAGGATTCTCGTTGAGTGCCCCCGGCGCGAATAAGAGACAGTGAAGAAGGACAATCCGCTTGCGGGTGGGCCTACTTCACCTATCCTGCCCGGCTG	KC176456	90
IncP *trf*A1	ATGACGACCAAGAAGCGAAAACCGCCGGCGAGGACCTGGCAAAACAGGTCAGCGAGGCCAAGCAGGCCGCGTTGCTGAAACACACGAAGCAGCAGATCAAGGAAATGCAGCTTTCCTTGTTCGATATTGCGCCGTGGCCGGACACGATGCGAGCGATGCCAAACG ACACGGCCCGCTCTGCCCTGTTCACCACGCGCAACAAGAAAATCCCGCGCGAGGGCGCTGCAAAACAAGGTCATTTTCCACGTCAACAAGGACGTGAAGATCACCTACACCGGCGTCGAGCTGCGGGCCGACGATGACGAACTGGTGTGGCAGCAGGTGTTGGAGTACG CGAAGCGCACCCCTATCGGCGAGCCGATCACCTTCACGTTCTACGAGCTTTGCCAGGACCTGGGCTGGTCGATCAATGGCCGGTATTACACGAAGGCCGAGGAATGCCTGTCGCGCCTACAGGCGACGGCGATGGGCTTCACGTCCGACCGCGTTGGGCACCTGGAATC GGTGTCGCTGCTGCACCGCTTCCGCGTCCTGGACCGTGGCAAGAAAACGTCCCGTTGCCAGGTCCTGATCGACGAGGAAATCGTCGTGCTGTTTGCTGGCGACCACTACACGAAATTCATATGGGAGAAGTACCGCAAGCTGTCGCCGACGGCCCGACGGATGTTCGAC TATTTCAGCTCGCACCGGGAGCCGTACCCGCTCAAGCTGGAAACCTTCCGCCTCATGTGCGGATCGGATTCCACCCGCGTGAAGAAGTGGCGCGAGCAGGTCGGCGAAGCCTGCGAAGAGTTGCGAGGCAGCGGCCTGGTGGAACACGCCTGGGTCAATGATGACCTG GTGCATTGCAAACGCTAGGGCCTTGTGGGGTCAGTTCCGGCTGGGGGTT	KC176456	100
IncP *trf*A2	CGAAATTCGTGTGGGAGAAGTACCGCAAGCTGACACCCACGGCACGACGAATGTTCGACTACTTCGCAACCCACAAACAACCGTACCCTCTCAAGTTGGAAACATTCCGGTTGATGTGCGGCTCGGATTCCAAGCGGCCAAAGAAGTGGCGTGAGCAGGTAGGCGAAG CATGCGCCGAGCTGCGCGAAAACGGCCTGGTCGAAAGTGCGTGGGTGAACGACGACCTGGTGCATTGCAAACG	AJ493460	91
IncQ *rep*B	CTGTAAGTCGATGATCTGGGCGTTGGCGGTGTCGATGTTCAGGGCCACGTCTGCCCGGTCGGTGCGGATGCCCCGGCCTTCCATCTCCACCACGTTCGGCCCCAGGTGAACACCGGGCAGGCGCTCGATGCCCTGCGCCTCAAGTGTTCTGTGGTCAATGCGGGCGTCGT GGCCAGCCCGCTCTAATGCCCGGTTGGCATGGTCGGCCCATGCCTCGCGGGTCTGCTCAAGCCATGCCTTGGGCTTGAGCGCTTCGGTCTTCTGTGCCCCGCCCTTCTCCGGGGTCTTGCCGTTGTACCGCTTGAACCACTGAGCGGCGGACCGCTCGATGCCGTCATTGA TCCGCTCGGAGATCATCAGGTGGCAGTGCGGGTTCTCGCCGCCACCGGCATGGATGGCCAGCGTATACGGCAGGCGCTCGGCACCGGTCAGGTGCTGGGCGAACTCGGACGCCAGCGCCTTCTGCTGGTCGAGGGTCAGCTCGACCGGCAGGGCAAATTCGACCTCCT TGAACAGCCGCCCATTGGCGCGTTCATACAGGTCGGCAGCATCCCAGTAGTCGGCGGGCCGCTCGACGAACTCCGGCATGTGCCCGGATTCGGCGTGCAAGACTTCATCCATGTCGCGGCATACTTGCCTTCGCGCTGGATGTAGTCGGCCTTGGCCCTGGCCGATTGG CCGCCCGACCTGCTGCCGTTTTCGCGTAAGGTGATAAATCGCATGCTGCCTC	AP011959	99
IncQ *ori*T	GCCGTTAGGCCAGTTTCTCGAAGAGAAACCGGTAAGTGCGCCCTCCCCCTACAAAGTAGGGTCGGGATTGCCGCCGCTGTGCCTCCATGATAGCCTACGAGACAGCACATTAACAATGGGGTGTCAAGATGGTT	FM179941	100
IncQ *ori*V	CTCCCGTACTAACTGTCACGAACCCCTGCAATAACTGTCACGCCCCCCTGCAATAACTGTCACGCCCCCCTGCAATAACTGTCACGAACCCCTGCAATTAACTGTCACGCCCCCAAACCTGCAAACCCAGCAGGGGCGGAAAGTGAGCGGGGTGTTGGAAAAATCCATC CATGATTATCTAAGAATAATCCACTAGGCGCGGTTATCAGCGCCCTTGTGGAAGCGCTGCTGCCCTTGCCCAATATGCCCGGCCAGAGGCCGGATAGCTGGTCTATTCGCTGCGCTAGGCTACACACCGCCCCACCGCTGCGCGGCAGGGGGAAAGGCGGGCAAAGCC CGCTAAACCCCACACCAAACCCCGCAGAAATACGCTGGAGCGCTTTTAGCCGCTTTAGCGGCCTTTCCCCCTACCCGAAGGGTGGGGGGCGCGTGTGCAGCCCCGCAGGGCCTGTCTCGGTCGAT	CP004059	100
IncW	CCTAAGAACAACAAAGCCCCCGGCCATCGTATCAACGAGATCATCAAGACGAGCCTCGCGCTCGAAATGGAGGATGCCCGCGAAGCTGGCTTAGTCGGCTACATGGCCCGTTGCCTTGTGCAAGCGACCATGCCCCACACCGACCCCAAGACCAGCTACTTTGAGCGC ACCAATGGCATCGTCACCTTGTCGATCATGGGCAAGCCGAGCATCGGCCTGCCCTACGGTTCTATGCCGCGCACC	AB366442	100
IncW *ori*V	GACCCGGAAAACCAAAAATACGGTTTGCTCGAATACGCGAACGCCAAAGGCTTCGCGCCGCTACAGATCGAGGAAGAAATTGCCAGCAGAGCAAAGGACTGGCGCAAGCGCAAGCTCGGAGCAATCATCGGAAAGGCCGAGCGTGGCGACGTGCTACTGACGCCGG AGATTACGCGCATTGCCGGTTCCGCCCTCGCCGCCTTGGAAATTCTCAAAGCGGCGAGCGAGCGCGGCCTAATCGTCCATGTGACCAAACAGAAGATCATCATGGACGGCAGCCTACAAAGCGCCATCATGGCAACCCGTGCTTGGCTTGGCTGCACAGATCGAGCGA CATTTCATTCAGGCACGTACCACCGAGGCGCTACAAGTCGCCAGAGAGCGCGGCAAGACGCTCGGGCGACCCAAGGGCAGCAAATCGAGCGCCTTGAAGCTGGACAGCCGTATTGATGAAGTAACAAGGCATACGTGAACCTTGGCTTGCCGCAAAGTCGCGCAGCC GAGTTTGTTAGGCGTCAGCCCTCACACCTTGCGCCTGTTCATCAAACGCCGGAACATCAAACCCACAAACACTAGACCAACCATCACCATGCCGGGGGAAGGGAACAACATGCCTAAGAACAACAAAGCCCCCGGCCATCGTATCAACGAGATCATCAAGACGAGCCT CGCGCTCGAAATGGAGGATGCCCGCGGAGCTGGCTTAGTCGGCTACATGGCCCGGTTGCCTTGTGCAAGCGACCATGCCCCACACCGACCCCAGGACCAGCTACTTTGAGCGCACCAATGGCATCGTCACCCTTGTCGATCATGCATCATCGTGTCTCAGACGCAGCTG ACGGTTCTATGCCGCGCACCTTGCTTGCTTGGATATGCACCGAGGCCGTGCGAACGAAAGACCCCGTGTTGAACCTTGGCCGGTCGCAATCGGAATTTCTACAAAGGCTCGGAATGCACACCGATGGCCGTTACACGGCCACCCTTCGCAATCAGGCGCAACGCCTGTT TTCATCCATGATTTCGCTTGCCGGCGAGCAAGGCAATGACTTCGGCATTGAGAACGTCGTCATTGCCAAGCGCGCTTTTCTATTCTGGAATCCCAAGCGGCCAGAAGATCGGGCGCTATGGGATAGCACCCTCACCCTCAC	AB366442	98
incY	AATTCAAACAACACTGTGCAGCCTGTAGCGTTGATGCGTTTGGGGGTATTCGTGCCGAAGCCATCAAAGAGCAAAGGAGAAAGTAAAGAGATTGATGCCACCAAAGCGTTTTCCCAGCTGGAGATAGCTAAAGCCGAGGGTTACGATGATATTAAAATCACCGGTCCT CGACTCGATATGGATACTGATTTCAAAACGTGGATCGGTGTCATCTACGCGTTCAGCAAATACGGCTTGTCCTCAAACACCATCCAGTTATCGTTTCAGGAATTCGCTAAAGCCTGTGGTTTCCCCTCAAAACGTCTGGATGCGAAACTGCGTTTAACCATTCATGAATC ACTTGGACGCTTGCGTAACAAGGGTATCGCTTTTAAGCGCGGAAAAGATGCTAAAGGCGACTATCAGACTGGTCTGCTGAAGGTCGGGCGTTTTGATGCTGACCTTGATCTGATAGAACTGGAGGCTGATTCGAAGCTGTGGGAGCTGTTCCAGCTTGATTATCGCGTT CTGTTGCAACACCACGCCTTGCGTGCCCTTCCGAAGAAAGAAGCTGCACAAGCCATTTACACTTTCATCGAAAGCCTTCCGCAGAATCCCGTTGCCGCTATCGTTCGCCGCGAATCCGTGAGCGCCTGGCTTTGCAGTCAGCTGTTGGCGAGCAAAACCGTATCATTAAG AAAGCGATAGAACAGCTTAAAACAATCGGCTATCTCGACTGTTCAATTGAGAAGAAAGGCCGGGAAAGTTTTGTAATCGTCCATTCTCGC	JN874483	99
int1	GCATCCTCGGTTTTCTGGAAGGCGAGCATCGTTTGTTCGCCCAGCTTCTGTATGGAACGGGCATGCGGATCAGTGAGGGTTTGCAACTGCGGGTCAAGGATCTGGATTTCGATCACGGCACGATCATCGTGCGGGAGGGCAAGGGCTCCAAGGATCGGGCCTTGATGTT ACCCGAGAGCTTGGCACCCAGCCTGCGCGAGCAGCTGTCGCGTGCACGGGCATGGTGGCTGAAGGACCAGGCCGAGGGCCGCAGCGGCGTTGCGCTTCCCGACGCCCTTGAGCGGAAGTATCCGCGCGCCGGGCATTCCTGGCCGTGGTTCTGGGTTTTTGCGCAGCA CACGCATTCGACCGATCCACGGAGCGGTGTCGTGCGTCGCCATCACATGTATGACCAGACCTTTCAGCGCGCCTTCAAACGTGCCGTAGAACAAGCAGGCATCACGAAGCCCGCCACACC	KC543497	100
int2	ACGGCTACCCTCTGTTATCTCTGCAAATGAAGTGCAACGCATTTTGCAGGTTATGGGATACTCGCAACCAAGTTATTTTTACGCTGCTGTATGGTGCAGGTTTGCGCATTAATGAATGCTTGCGTTTGCGGGTTAAAGATTTTGATTTTGATAATGGCTGCATCACTGTGC ATGACGGTAAGGGTGGGAAAAGCAGAAACAGCCTACTGCCCACGCGCCTAATCCCAGCAATAA	KC417300	99
intI3	AGTGGGTGGCGAAGAGTGGCGCAGGGTGTGGACAGATACGTGTTTGGCAATGCCAGCCTGAACTACCGCTTTTTTTAGTTGCCGGTTCAGTCTTTCCTCAAACAAGTGGTGGCGGCGCTCAACGCCGGTTTTGTGGGTCCACAGACAGCTTGGCCGATGGAAACACCCA GAACCAGGCCCAGCTCTCGCCCGCCCTGGGGTACTTGCGCTCCAGTGCATGAGGCAGATACACGCCTCCGCGCCCCGTGGCACGGTCCTGCCCCCACACAGCGCGGACCTGAATCAGCTGCGCCCGCAACCGAGGTACGAGCGCCCTGGGCAGCATCACCACGCGGTC CTTGTCGCCCTTGCCGCTGCGCACAATGATCGCGTGGCGGTCGAAATCCACATCCTTGACCCGCAGGCCCAGCGCTTCGCGCAGGCGCAACCCACTGCCGTAAAGCAGGGCGGCCAACAGCGCTTCGGTGCCCGCCATGTGCGAAAGCAACGTCTGAACCTCCTGCACC GTCAGCACCACCGGAATCCGCTTGCGTTCTGGCGGCCGACCAATCTGCTGCATCCACGGCAATTCCATGCCCAGCACCTGCCGATACAAGAACAA	HE616889	99
tet(A)	GGCGGTCTTCTTCATCATGCAACTTGTCGGACAGGTGCCGGCCGCGCTTTGGGTCATTTTCGGCGAGGATCGCTTTCACTGGGACGCCACCCACAATCGGCATTTCGCTAGCCGCATTTGGCATTCTGCATTCACTCGCCCAGGCAATGATCACCGGCCCTGTAGCCGCCC GGCTCGGCGAAAGGCGGGCACTCATGCTCGGAATGATTGCCGACGGCACAGGCTACATCCTGCTTGCCTTCGCGACACGGGGATGGATGGCGTTCCCGATCATGGTCCTGCTTGCTTCGGGTGGCATCGGAATGCCGGCGCTGCAAACAATGTTGTCCAGGCAGGTGGA TGAGGAACGTCAGGGGCAGCTGCAAGGCTCACTGGCGGCGCTCACCAGCCTGACCTCGATCGTCGGACCCCTCCTCTTCACGGCGATCTATGCGGCTTCTATAACAACGTGGAACGGGTGGGGCATGGGATTGCAGGCGCTGCCCTCTACTTGCTCTGCCTGCCG	CP003739	99
tet(B/P)	AAAACTTATTATATTATAGTGGAGCTATAAAATCAGTTGGAAGAGTTGATTTAGGCAATACACAGACGGATTCTATGGAGCTTGAGCGTAAGAGAGGAATTACCATTAAATCGTCAACCATATCTTTTAATTGGAATAATGTTAAGGTGAATATTATTGATACTCCA	DQ366035	100
tet(M)	TGGCTTGCTTGTGTTCTCTCTTATTTTTCACCAAAGGGTATCGCCGTCGAATCTAACTCCTCTTGACGTTCTAAAGCGATATCCGTTTTCGTTTACCTCTGTCCACGCTTCCTAATTCTGTAATCGCTCCACTGTTATATAATAAGCTTTCTGT	GU373623	92

tet(Q)	AGAATCTGCTGTTTGCCAGTGGAGCAACGGAAAAGTGCGGCCGTGTGGATAATGGTGACACCATAACGGACTCTATGGATATAGAGAAACGTAGAGGAATTACTGTCCGGGCTTCTACGACATCTATTATCTGGAATGGAGTGAAATGCAATATCATTGACACTCCG	Y08615	100
tet(S)	GAAAGCTTACTATACAGTAGCGGAGCAATTAAAGAGTTAGGAAGTGTAGATAGCGGTACAACGAAAACGGATACTATGTTTTTGGAACGCCAGAGAGGTATTACTATTCAGACCGCAATAACATCTTTTCAACGGGAAAATGTTAAAGTAAATATTGTAGATACTCCT	JX865374	100
tet(T)*	AAGGTTTATTATATAAAAGTGGGGCAATTAATAAAATTGGAAGGGTCGATAATGCTACAACGATAACGGATTCGATGGAACTTGAAAGAGATAGGGGGATAACTATACGGGCGTCTACAGTTTCATTTAATTATAATGATACAAAGGTAAATATCATAGATACACCT	L42544	90
aad(A)	GTGGATGGCGGCCTGAAGCCACACAGTGATATTGATTTGCTGGTTACGGTGACCGTAGGCTTGATGAAAACAACGCGGCGAGCTTTGATCAACGACCTTTGGAAACTTCGGCTTCCCCTGGAGAGAGCGAGATTCTCCGCGCTGTAGAAGTCACCATTGTTGTGCACGACGACATCATTCCGTGGCGTTATCCAGCCAGCGCGAACTGCATTTGGAGAATGGCAGCGCGATGTCATTCTTGCAGGTTCTTCGAGCCAGCCACGATCGACATTGATCTGGCTATCTTGCTGACAAAGCGAGAGAACGATGCGTGCCTGGTAGTCCAGCG	KC540778	95
str(A)	CTTGGTGATAACGGCAATTCCGGGAGTACCGGCGGCTGATCTGTCTGGAGCGGATTTGCTCAAAGCGTGGCCGTCAATGGGGCAGCAACTTGGCGCTGTTCACAGCCTATCGGTTGATCAATGTCCGTTTGAGCGCAGGCTGTCGCGAATGTTCGGACGCGCCGTTGATGTGGTGTCCCGCAATGCCGTCAATCCCGACTTCTTACCGGACGAGGACAAGAGTACGCCGCAGCTCGATCTTTTGGCTCGTGTCGAACGAGAGCTACCGGTGCGGCTCGACCAAGAGCGCACCGATATGGTTGTTTGCCATGGTGATCCCTGCATGCCGAACTTCATGGTGGACCCTAAAACTCTTCAATGCACGGGTCTGATCGACCTTGGGCGGCTCGGAACAGCAGATCGCTATGCCGATTTGGCACTCATGATTGCTAACGCCGAAGAGAACTGGGCAGCGCCAGATGAAGCAGAGCGCGCCTTCGCTGTCCTATTCAATGTATTGGGGATCGAAGCCCCCGACCGCGAACGCCTTGCCTTCTATCTGCGATTGG	KC495078	100
str(B)	ATCGTCAAGGGATTGAAACCTATAGAAGACATTGCTGATGAACTGCGCGGGGCCGACTATCTGGTATGGCGCAATGGGAGGGGAGCAGTCCGGTTGCTCGGTCGTGAGAACAATCTGATGTTGCTCGAATATGCCGGGGAGCGAATGCTCTCTCACATCGTTGCCGAGCACGGCGACTACCAGGCGACCGAAATTGCAGCGGAACTAATGGCGAAGCTGTATGCCGCATCTGAGGAACCCCTGCCTTCTGCCCTTCTCCCGATCCGGGATCGCTTTGCAGCTTTGTTTCAGCGGGCGCGCGATGATCAAAACGCAGGTTGTCAAACTGACTACGTCCACGCGGCGATTATAGCCGATCAAATGATGAGCAATGCCTCGGAACTGCGTGGGCTACATGGCGATCTGCATCATGAAAACATCATGTTCTCCAGTCGCGGCTGGCTGGTGATAGATCCCGTCGGTCTGGTCGGTGAAGTGGGCTTTGGCGCCGCCAATATGTTCTACGATCC	KC495078	100
*sul*1	TTCGGCATTCTGAATCTCACCGAGGACTCCTTCTTCGATGAGAGCCGGCGGCTAGACCCCGCCGGCGCTGTCACCGCGGCGATCGAAATGCTGCGAGTCGGATCAGACGTCGTGGATGTCGGACCGGCCGCCAGCCATCCGGACGCGAGGCCTGTATCGCCGGCCGATGAGATCAGACGTATTGCGCCGCTCTTAGACGCCCTGTCCGATCAGATGCACCGTGTTTCAATCGACAGCTTCCAACCGGAAACCCAGCGCTATGCGCTCAAGCGCGGCGTGGGCTACCTGAACGATATCCAAGGATTTCCTGACCCTGCGCTCTATCCCGATATTGCTGAGGCGGACTGCAGGCTGGTGGTTATGCACTCAGCGCAGCGGGATGGCATCGCCACCCGCACCGGTCACCTTCGACCCGAAGACGCGCTCGACGAGATTGTGCGGTTCTTCGAGGCGCGGGTTTCCGCCTTGCGACGGAGCGGGGTCGCTGCCGACCGGCTCATCCTCGATCCGGGGATGGGATTTTTCTTGAGCCCCGCACCGGAAACATCGCTGCACGTGCTGTCGAACCTTCAAAAGCTGAAGTCGGCGTTGGGGCTTCCGCTATTGGTCTCGGTGTCGCGGAAATCCTTCTTGGGCGCCACCGTTGGCCTTCCTGTAAAGGATCTGGGTCCAGCGAGCCTTGCGGCGGAACTTCACGCGATCGGCAATGGCGCTGACTACGTCCGCACCCACGCGCCTGGAGATCTGCGAAGCGCAATCACCTTCTCGGAAACCCTCGCGAAATTTCGCAGTCGCGACGCCAGAGACCGAGGGTTAGATCAT	KC170992	100
*sul*2	TTATGCATTCGGTGCAAGACGGGCAGGCAGATCGGCGCGAGGCACCCGCTGGCGACATCATGGATCACATTGCGGCGTTCTTTGACGCGCGCATCGCGGCGCTGACGGGTGCCGGTATCAAACGCAACCGCCTTGTCCTTGATCCCGGCATGGGGTTTTTCTGGGGGCTGCTCCCGAAACCTCGCTCTCGGTGCTGGCGCGGTTCGATGAATTGCGGCTGCGCTTCGATTTGCCGGTGCTTCTGTCTGTTTCGCGCAAATCCTTTCTGCGCGCGCTCACAGGCCGTGGTCCGGGGGATGTCGGGGCCGCGACACTCGCTGCAGAGCTTGCCGCCGCCGCAGGTGGAGCTGACTTCATCCGCACA	JX566450	100
*sul*3	GATCTGGAGCTAACCTATGGCTTTGTTTATTTTCAAGGCTTCTGATAAAGACTTACCATCATGGGAGCGGAGATAAGCTGCTCATTTTTCAGATGCGTACATGTCTGCTGCGAGAGCAGGTGCTAAACGAGATTTCACATCTGCCTCCAGTCCTTTTACCTAAGAATGATGTCCGTGACACGGCATTCATTACTTCCAACTTGTCAGCTTCGTGAATTTACGAGGAAACGATTTAAAACTAGAATAGATGTTTCTAGCTTTAGAGCCTAAAAAGAAGCCCCATACCCGGATCAAGAATAATTTGTTCATGCTTTACACCAGCCTCAACTAAAGCAGCAATTCTTTCTTTAAAAAATTCCATCATGGAAGTAAAAACCTCTTCCGGATTCGTTTCAACGTTAGTAGCTGCACCAATTCGCTGAACGGAGTGCATCAACACAAGTTTGCAGTCTGATTTTACCAAGCGAGAATAAATCTCAGGATAAGGAAAACCTTGAATATCATTAATAAAATCAACCTTTTGTTTTATGCAAAAACTAGGGACTTCAGGTTTAAATGTATCAACAGAAATAGAAATGCCTCTTTCTTTTAAAGCCTTAATGACAGGTTTGAGTCTTTTGATTTCTTCCACAACGCCCACTTCAGTTGTATCAGGATTACTGGAAGCGGCTCCCAAATCAATCACATCTGCTCCATCTTCAACCAAATGCAGAGCATGCTCAATTGCCTAATCTGTATCTAAATAAAGTCCTCCATCGGAAAAACCATCGGTGGTTATATTAACGATTGCAAAAATCTTGCTC	CP004058	93
erm(A)	GTTCAAGAACAATCAATACAGAGTCTACACTTGGCTTAGGATGAAAATATAGTGGTGGTACTTTTTTGAGCATTTTTATATCCATCTCCACCATTAATAGTAAACCCAAAGCTCGTTGCAGATTTTGCAATCTTTTCGCAAATCCCTTCTCAACGATAAGATAGCTATATTTAGCCTGACTTTCAAAGGTAATTCTTTTGACAATATCCGTACTGATGTTATAAGGAATATTACCAWATATCTTATAGTTTATATGTTTTGGGAAGGAAAATTTTAGAATATCCGTTTGAATCACTTTTATATTCTCAGAGGGGTTTACCGCTTCTTTAGTCACTTGACATAAGCCTCCATCAATTTCTATAGCAGTAACTGATCGACTCATTTTGACTAGCTCTTTGGTAAAATGTCCTTTTCCTGATCC	FN435325	99
erm(B)	AAAACTTACCCGCCATACCACAGATGTTCCAGATAAATATTGGAAGCTATATACGTACTTTGTTTCAAAATGGGTCAATCGAGAATATCGTCAACTGTTTACTAAAAATCAGTTTCATCAAGCAATGAAACACGCCAAA	HF678446	100
erm(C)	TAGCAAACCCGTATTCCACGATTAAATAAATCTCATTAGCTATACTATCAAAAACAATTTTGCGTATTATATCCGTACTTATGTTATAAGGTATATTACCATATATTTTATAGGATTGGTTTTTAGGAAATTTAAACTGCAATATATCCTTGTTTAAAACTTGGAAATTATCGTGATCAACAAGTTTATTTTCTGTAGTTTTGCATAATTTATGGTCTATTTCAATGGCAGTTACGAAATTACACCTCTTTACTAATTCAAGGGTAAAATGGCCTTTTCCTGAGCCGATTTC	JF968527	100
erm(F)	TCGTTTTACGGGTCAGCACTTTACTATATTGATAAAGTGCTAATAAAAGATGCAATAAGACAAGCAAATATAAGTAATCAGGATACGGTTTTAGATATTGGGGCAGGCAAGGGGTTTCTTACTGTTCATTTATTAAAAATCGCCAACAATGTTGTTGCTATTGAAAACGACACAGCTTTGGTTG	JQ707297	100
bla$_{CTX-M}$	ATGTGCAGCACCAGTAAAGTGATGGCCGCGGCCGCGGTGCTGAAGAAAAGTGAAAGCGAACCGAATCTGTTAAATCAGCGAGTTGAGATCAAAAAATCTGACCTTGTTAACTATAATCCGATTGCGGAAAAGCACGTCAATGGGACGATGTCACTGGCTGAGCTTAGCGCGGCCGCGCTACAGTACAGCGATAACGTGGCGATGAATAAGCTGATTGCTCACGTTGGCGGCCCGGCTAGCGTCACCGCGTTCGCCCGACAGCTGGGAGACGAAACGTTCCGTCTCGACCGTACCGAGCCGACGTTAAACACCGCCATTCCGGGCGATCCGCGTGAT	JN194214	100
bla$_{OXA20}$	AGAGCGGTGACTACTGGATAGATGGAAATCTTGCAATTTCAGCAAATGAACAAATTTCCATCCTAAAGAAGCTTTATCGAAATGAGCTTCCTTTTAGGGTAGAGCACCAACGCTTGGTTAAAGACTTGATGATTGTCGAAGCCAAACGCGATTGGATACTACGTGCCAAAACAGGCTGGGATGGTCAAATGGGTTGGTGGGTCGGTTGGGTAGAGTGGCCTACAGGCCCAGTATTTTTTGCGTTAAATATCGACACGCCAAACAGGATGGAAGACCTTCATAAACGAGAGGCAATTGCGCGTGCTATTCTTCAATCCGTCAATGCTTT	FJ445404	100
bla$_{OXAI}$	TCCCACACCAGAAAAACCAGTTTTTGAATGCACTAGATATTCAGGTGCCGCCTCCGTTATACCAAAGCCTCTTTTACTATTAGCTGGTTTTCTTTAGATGCTGACAATTTATTTAAATATAGAGACTCTAGAAACTCCACTTGATTAACTGCGGAAATTCTAAGCTGGCCTTCCAACCAGAATTTGTCAATGCCACCACTGATATTCTGGTTGCCATAGGAAAATTTTTTAAGGTATTTCTGCATTCTTACTTCGCCAACTTCTCTGGCGATTTGTTGA	JQ342831	99
bla$_{OXAII}$	AAGAAACGCTACTCGCCTGCATCGACATTCAAGATACCTCATACACTTTTTGCACTTGATGCAGGCGCTGTTCGTGATGAGTTCCAGATTTTTCGATGGGACGGCGTTAACAGGGGCTTTGCAGGCCACAATCAAGACCAAGATTTGCGATCAGCAATGCGGAATTCTACTGTTTGGGTGTATGAGCTATTTGCAAAGGAAATTGGTGATGACAAAGCTCGGCGCTATTTGAAGAAAATCGACTATGGCAACGCCGATCCTTCGACAAGTAATGGCGATTACTGGATAGAAGGCAGCCTTGCAATCTCGGCGCAGGAGCAAATTGCATTTCTCAGGAAGCTCTATCGTAACGAGCTGCCCTTTCGGGTAGAACATCAGCGCTTGGTCAAGGATCTCATGATTGTGGAAGCCGGTCGCAACTGGATACTGCGTGCAAAGACGGGCTGGGAAGGCCGTATGGGTTGGTGGGTAGGATGGGTTGAGTGG	KC493654	100
bla$_{OXAV}$*	AGCCGCATATTTAGTTCTAGTTTTTTATGCAAGCACCGCGCTCTCAGAGTCTATTTCTGAAAATTTGGCGTGGAATAAAGAATTTTCTAGTGAATCCGTACATGGCGTTTTTGTACTTTGTAAAAGTAGTAGCAATTCCTGTACTACAAATAATGCGGCACGTGCATCTACAGCCTATATTCCAGCATCAACATTCAAAATTCCTAATGCTCTAATAGGTCTTGAAACCGGCGCCATAAAAGATGAACGGCAGGTTTTCAAATGGGACGGCAAGCCCAGAGCCATGAAGCAATGGGAAAAAGACTTAAAGCTAAGGGGCGCTATACAGGTTTCTGCTGTTCCGGTATTTCAACAAATTGCCAGAGAAGTTGGCGAAATAAGAATGCAAAAATACCTTAACCTGTTTTCATACGGCAACGCCAATATAGGGGGAGGCATTGACAAATTCTGGCTAGAAGGTCAGCTTAGAATCTCAGCATTCAATCAAGTTAAATTTTTAGAGTCGCTCTACCTGAATAATTTGCCAGCATCAAAAGCAAACCAACTAATAGTAAAAGAGGCAATAGTTACAGAAGCAACTCCAGAATATATAGTTCATTCAAAAACTGGGTATTCCGGTGTTGGCACAGAATCAAGTCCTGGTGTCGCTTGGTGGGTTGGTTGGGTAGAGAAAGGAACTGAGGT	AF347074	100
bla$_{PSE}$	ACCGTATTGAGCCTGATTTAAATGAAGGTAAGCTCGGTGATTTGAGGGATACGACAACTCCTAAGGCAATAGCCAGTACTTTGAATAAATTTTTATTTGGTTCCGCGCTATCTGAAATGAACCAGAAAAAATTAGAGTCTTGGATGGTGAACAATCAAGTCACTGGTAATTTACTACGTTCAGTATTGCCGGCGGGATGGAACATTGCGGATCGCTCAGGTGCTGGCGGATTTGGTGCTCGGAGTATTACAGCAGTTGTGTGGAGTGAGCATCAAGCCCCAATTACGTGGAGCACCTATCTAGCTCAAACACAGGCTTCAAT	JX491633	99
bla$_{TEM}$	TCCGCTCATGAGACAATAACCCTGATAAATGCTTCAATAATATTGAAAAAGGAAGAGTATGAGTATTCAACATTTCCGTGTCGCCCTTATTCCCTTTTTTGCGGCATTTTGCCTTCCTGTTTTTGCTCACCCAGAAACGCTGGTGAAAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTTACATCGAACTGGATCTCAACAGCGGTAAGATCCTTGAGAGTTTTCGCCCCGAAGAACGTTTTCCAATGATGAGCACTTTTAAAGTTCTGCTATGTGGTGCGGTATTATCCCGTGTTGACGCCGGGCAAGAGCAACTCGGTCGCCGCATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCACAGAAAAGCATCTTACGGATGGCATGACAGTAAGAGAATTATGCAGTGCTGCCATAACCATGAGTGATAACACTGCGGCCAACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAACCGCTTTTTTGCACAACATGGGGGATCATGTAACTCGCCTTGATCGTTGGGAACCGGAGCTGAATGAAGCCATACCAAACGACGAGCGTGACACCACGATGCCTGCAGCAATGGCAACAACGTTGCGCAAACTATTAACTGGCGAACTACTTACTCTAGCTTCCCGGCAACAATTAATAGACTGGATGGAGGCGGATAAAGTTGCAGGACCACTTCTGCGCTCGGCCCTTCCGGCTGGCTGGTTTATTGCTGATAAATCTGGAGCCGGTGAGCGTGGGTCTCGCGGTATCATTGCAGCACTGGGGCCAGATGGTAAGCCCCCCCGTATCGTAGTTATCTACACGACGGGGAGTCAGGCAACTATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAGCATTGGTAACTGTCAGACCAA	GQ343175	99
bla$_{VIMgene}$-2	TTTGGTCGCATATCGCAACGCAGTCGTTCGTGGCGCGGTCTACCCGTCCAATGGTCTCATTGTCCGTGATGGTGATGAGTTGCTTTTTGATTGATACAGCGTGGGGTGCGAAAAACACAGCGGCACTTCTCGCGGAGATTGAAAAGCAAATTGGACTTCCCGTAACGCGTGCAGTCTCCACGAACTTTCATGACGACCGCGTCGGCGGCGTTGATGTCCTTCGGGCGGCTGGGGTGGCAACGTACGCATCACCGTCGACACGCCGGCTAGCCGAGGCAGAGGGGAACGAGATTCCCACGCATTCTCTAGAAGGACTCTCATCGAGCGGGGACGCAGTGCGCTTCGGTCCAGTAGAGCTCTTCTATCCTGGTGCTGCGCATT	KC417377	99
qnr(B)	GATCGTGAAAGCCAGAAAGGGTGCAATTTTAGTCGTGCGATGCTGAAAGATGCCATTTTTAAAAGCTGTGATTTATCCATGGCGGATTTTCGCAATGCCAGTGCGCTGGGCATTGAAATTCGCCACTGCCGCGCACAAGGCGCAGATTTCCGCGGCGCAAGTTTTATGAATATGATCACTACTCGCACCTGGTTTTGTAGTGCATATATCACTAACACAAATCTAAGCTACGCCAATTTTTCGAAAGTCGTGCTGGAAAAGTGTGAGCTGTGGGAAAACCGTTGGATGGGTGCCCAGGTACTGGGCGCGACGTTCAGTGGTTCAGATCTCTCCGGCGGCGAGTTTTCGACTTTCGACTGGCGAGCAGCAAACTTCACACATTGCGATCTGACCAATTCGGAGTTGGGGGACTTAGATATTCGGGGCGTTGATTTACAAGGCGTTAAGTTGGACAACTACCAGGCATCGT	JX259319	100
qnr(S)*	ACGACATTCGTCAACTGCAAAGTTCATTGAACAGGGTGATATCGAAGGCTGCCACTTTGATGTCGCAGATCTTCGTGATGCAAGTTTCCAACAAATGCCAACTTGCGATGGCAGCTTCAGTAATGCCAAATTGCTACGGTATAGAGTTCCGTGCGTGTGATTTAAAAGGTGCCAACTTTTCCCGAACAAACTTTGCCCATCAAGTGAGTAATCGTATGTACTTTTGCTCAGCATTTATTTCTGGATGTAATCTTTCCTATGCCAATATGGAGAGGGTTTGTTTTAGAAAAATGTGAGTTTGTTTTGAAAATCGCTGGGACAGGAACGAACCTAGCGGGGTGCATCACTGAAAGAAGTCAGACTTAAGTCGAGGTTGTTTTTCCGAAGAATGTCTGGGGGCAAATTTAGCCCTACAAGGGTGCCAAATTTAA	KF362122	96

fos (A)*	CTGAATGGGNAAANTACTCCGTGNCNCCTTTAAGAGGCAGCCACCAGCGGTTTACGGTGAGCACGGCGTGGTTTATGTTCATCSTCTTTACCGTATCACGTCCGGGCGCGAAAAACAAAAGGGCWCGTCATGCTGGCAATCTCTCAACCACCTGACCCTCGCGGTCAGC GACCTGCAAAAAAGCGTCACCTTCTGGCACGARCTGCTGGGGCTTGCGCTGCACGCCCGCTGGAATACCGGGGCCTATCTCACCTGCGGCGATCTGTGGGTCTGCCTGTCGTACGACGAGGCGCGCCAGCATGTGCCGACGCAGGAGAGCGACTA	EU487198	90
van(C2)*	CGCAGGGACGGTGATTTTGGCGCTGATcAGCTGGTACTTTTCTTCAAAATCGaAAAAGCCGTCTACTAATGaAATGGCGTCACAAGCACCGACAGTCAAAGAGTCGTTGCCCAAAATACCGCAACCGATCTCAACACCGGCAATATTTTTTTGTAGGAGCACTGCGGAAC AATAAGTAAAGGCTTCTTTTAAGGCAGAAGCGATTTCTTCAACGCAGGTGACTCTAGTGATCCCTTTTGAGGAGCCCGCTTCATTAGGCTTAAAGAAAACTGGAAAGCCATGGGTCTGGATAAAAGCTTCGATTTGTTCTTGCTGGTTGGCTTGatTTTGTCAAGAGAATC GTAGGAGCACTTtGTACGCCAATGgCtGCtGCAGCTtGAtGCAACAGCCtTTTGTTCATACATAagGGCAGAACCTGCCacCCCCGCAGCCTACATAAGgCAGCTtCATCAatTTCAAACAATCctTTGGATACTGCCATCTTCCCCG	JX220985	99

Supplementary Table 3c. Primers and probes used for quantitative PCR.

Name	Sequence (5'->3')	Amplicon size (bp)	Target	Reference
Universal 16S				
BACT1369F	CGGTGAATACGTTCYCGG			(2)
PROK1492R	GGWTACCTTGTTACGACTT	123	*rrn*S gene	
TM1389F	HEX- CTTGTACACAC CGCCCG TC- BHQ1			
int1				
intI-F2	TCGTGCGTCGCCATCACA	67	Integrase class 1	(3)
intI-R2	GCTTGTTCTACGGCACGTTTGA			
sul1				
sul1-F	GACTGCAGGCTGGTGGTTAT	105	Sulfamethazine resistance gene 1	(1)
sul1-R	GAAGAACCGCACAATCTCGT			
str(A)				
strA -F	TATGGTTGTTTGCCATGGTG		Streptomycin resistance gene locus A	This study
strA -R	TTCTCTTCGGCGTTAGCAAT			
str(B)				
strB -F	ATCGCTTTGCAGCTTTGTTT		Streptomycin resistance gene locus B	(4)
strB -R	ATGATGCAGATCGCCATGTA	143		
*str*B -P	HEX-ATGCCTCGGAACTGCGT-BHQ1			
IncW *repA*				
incW-F	GGCCATCGTATCAACGAGAT		Plasmid	(1)
incW R	ATTGGTGCGCTCAAAGTAGC	153	incompatability	
incW-P	HEX-AGCTGGCTTAGTCGGCTACA-BHQ1		group W	
erm(B)				
ermB -F	AAAACTTACCCGCCATACCA	139	Erythromycin resistance gene locusB	(5)
ermB -R	TTTGGCGTGTTTCATTGCTT			
erm(F)				
ermF -F	TCGTTTTACGGGTCAGCACTT	182	Erythromycin resistance gene locus F	(5)
ermF -R	CAACCAAAGCTGTGTCGTTT			

1. **Marti R, Tien YC, Murray R, Scott A, Sabourin L, Topp E.** 2014. Safely Coupling Livestock and Crop Production Systems: How Rapidly Do Antibiotic Resistance Genes Dissipate in Soil Following a Commercial Application of Swine or Dairy Manure? Appl Environ Microbiol **80:**3258-3265.
2. **Suzuki MT, Taylor LT, DeLong EF.** 2000. Quantitative analysis of small-subunit rRNA genes in mixed microbial populations via 5 '-nuclease assays. Applied and Environmental Microbiology **66**. 4605-4614.
3. **Gaze WH, Zhang L, Abdouslam NA, Hawkey PM, Calvo-Bado L, Royle J, Brown H, Davis S, Kay P, Boxall ABA, Wellington EMH.** 2011. Impacts of anthropogenic activity on the ecology of class 1 integrons and integron-associated genes in the environment. Isme Journal **5:**1253-1261.
4. **Walsh F, Ingenfeld A, Zampicolli M, Hilber-Bodmer M, Frey JE, Duffy B.** 2011. Real-time PCR methods for quantitative monitoring of streptomycin and tetracycline resistance genes in agricultural ecosystems. J Microbiol Methods **86:**150-155.
5. **Knapp CW, Zhang W, Sturm BSM, Graham DW.** 2010. Differential fate of erythromycin and beta-lactam resistance genes from swine lagoon waste under different aquatic conditions. Environmental Pollution **158:**1506-1512.

Table 3d: Thermocycler conditions for quantification of gene targets.

qPCR Marker (primer pair/probe)	PCR Conditions Temperature (°C), Time (min or sec)				
	Final primer concn (nM)	**Enzyme Activation**	**Denaturing**	**Annealing /Extension**	**Cycles**
16S rRNA (BACT1369F/ PROK1492R/ TM1389)	300	95, 10 min	95, 15 s	59, 40 s	39X
int1 (intI-F2/ intI-R2)	400	95, 10 min	95, 15 s	62, 60 s	39X
sul1 (sul1-F/ sul1-R)	200	95, 10 min	95, 15 s	64, 60 s	39X
str(A) (strA-F/ strA -R)	400	95, 10 min	95, 15 s	62, 60 s	39X
str(B) (strB –F/ strB –R/ strB –P)	300	95, 10 min	95, 15 s	61, 30 s	39X
IncW *repA* (incW-F/ incW-R/ incW-P)	300	95, 10 min	95, 15 s	61, 30 s	39X
erm(B) (ermB –F/ ermB -R)	400	95, 10 min	95, 15 s	65, 60 s	39X
erm(F) (ermF –F/ ermF -R)	300	95, 10 min	95, 15 s	61, 40 s	39X

Table S4. Abundance of viable enteric bacteria in soils sampled at vegetable harvest. Soils were fertilized inorganically (I), or with dewatered municipal biosolids (Biosolids) or sewage sludge (Sludge). Plots were sampled in the year of application (2011 for biosolids, 2012 for sludge) and the sludge plots additionally sampled the following year (2013). In cases where not all replicate samples were quantifiable the number of replicates with the indicated result is indicated in brackets. BDL = below detection limit. NT = not tested. D = detected but below the limit of quantification.

SOIL		Cucumber (N=4)		Tomato (N=4)		Pepper (N=4)		Carrot (N=4)		Radish (N=4)	
	Organism†	I	Biosolids	I	Biosolids	I	Biosolids	I	Biosolids	I	Biosolids
2011	Total coliforms	4.19 ± 3.68	4.00 ± 4.05	2.56, 2.39, D(2)	3.52 ± 3.51	3.00 ± 2.90, D(1)	3.30 ± 3.36	3.44 ± 3.21	3.44 ± 2.99	2.27, 2.25, D(2)	3.91 ± 3.88, BDL(1)
	E. coli	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	*Enterococcus**	12/12	11/12	1/12	0/12	1/12	0/12	8/12	6/12	5/12	4/12
	Faecal coliforms	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	C. perfringens	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Aeromonas sp.	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Salmonella sp.	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Yersinia sp.	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Campylobacter sp.	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Listeria sp.	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)

SOIL		Tomato (N=4)		Carrot (N=4)		Radish (N=4)		Lettuce (N=4)	
	Organism†	I	Sludge	I	Sludge	I	Sludge	I	Sludge
2012	Total coliforms	3.50 ± 3.35	3.32 ± 2.93	3.47 ± 2.43	3.52 ± 3.43	2.97 ± 2.17	3.43 ± 3.41	4.04 ± 3.83	3.57 ± 3.39
	E. coli	BDL(4)	D(1), BDL(3)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	*Enterococcus**	2/4	2/4	4/4	4/4	3/4	1/4	4/4	4/4

Faecal coliforms	BDL(4)	D(3), BDL(1)	D(3), BDL(1)	D(3), BDL(1)	D(1), BDL(3)	2.70, D(3)	D(1), BDL(3)	D(4)
C. perfringens	BDL(4)	D(1), BDL(3)	D(1), BDL(3)	2.71, D(3)	BDL(4)	2.90 ± 1.88, D(1)	BDL(4)	D(4)
Aeromonas sp.	3.06, D(2), BDL(1)	2.88, D(3)	2.99, D(3)	2.62, D(2), BDL(1)	D(3), BDL(1)	2.85, D(1), BDL(2)	D(2), BDL(2)	D(3), BDL(1)
Salmonella sp.	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
Yersinia sp.	3.68 ± 3.50	3.42 ± 2.87	3.36 ± 2.84	3.26 ± 2.69	D(4)	3.06, D(3)	BDL(4)	BDL(4)
Campylobacter sp.	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
Listeria sp.	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)

SOIL		Radish (N=8)		Lettuce		Carrots (N=8)	
	Organism†	Control	Sludge	Control (N=8)	Sludge (N=7)	Control	Sludge
2013	Total coliforms	3.11 ± 2.82	3.18 ± 3.16	3.80 ± 3.58	3.97 ± 4.08	3.17 ± 3.05, D(1)	3.06 ± 2.75, D(3)
	Fecal coliforms	D(1), BDL(7)	BDL(8)	D(4), BDL(4)	2.86, D(4), BDL(2)	D(4), BDL(4)	D(5), BDL(3)
	E. coli	D(2), BDL(6)	BDL(8)	D(1), BDL(6)	BDL(7)	BDL(8)	BDL(8)
	Enterococcus	D(1), BDL(7)	D(1), BDL(7)	2.64, D(4), BDL(2)	2.81, D(2), BDL(4)	BDL(8)	BDL(8)
	Aeromonas	D(1), BDL(7)	D(3), BDL(5)	2.97 ± 2.70, D(4)	3.65 ± 3.80, D(1)	3.27 ± 3.09	3.48 ± 3.10
	C. perfringens	D(2), BDL(6)	2.74 ± 2.06, D(4)	D(3), BDL(5)	2.60, D(6)	D(2), BDL(6)	2.84 ± 2.23, D(4)
	Yersinia	3.66 ± 3.52, D(4), BDL(1)	BDL(8)	D(4), BDL(4)	2.64, D(6)	3.22 ± 2.92, D(2), BDL(1)	3.09 ± 2.84, D(2)
	Campylobacter	BDL(8)	BDL(8)	BDL(8)	BDL(7)	BDL(8)	BDL(8)
	Salmonella	0/8	0/8	0/8	0/7	0/8	0/8
	Listeria	0/8	0/8	0/8	0/7	0/8	0/8

† Log10 CFU/g wet weight. * Organism was enumerated by enrichment, with the number of positive enrichments indicated.

Table S5. Abundance of viable enteric bacteria on vegetables at harvest. Soils were fertilized inorganically (I), or with dewatered municipal biosolids (Biosolids) or sewage sludge (Sludge). Plots were sampled in the year of application (2011 for biosolids, 2012 for sludge) and the sludge plots additionally sampled the following year (2013). Significant differences for fertilizer treatment for a given crop is indicated in bold. NA = not analyzed in that particular year. BDL = below detection limit.

VEGETABLES

		Cucumber (N=4)		Tomato (N=4)		Pepper (N=4)		Carrot (N=4)		Radish (N=4)	
	Organism†	I	Biosolids	I	Biosolids	I	Biosolids	I	Biosolids	I	Biosolids
2011	Total coliforms	3.26 ± 3.33, D(1)	D(4)	1.46, D(3)	1.45, D(3)	4.44 ± 4.38	4.37 ± 4.35	4.29 ± 4.28	3.71 ± 3.45	1.78, 1.30, D, BDL	D(4)
	E. coli	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	*Enterococcus**	1/12	1/12	0/12	0/12	5/12	1/12	0/12	0/12	1/12	1/12
	Fecal coliforms	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	C. perfringens	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Aeromonas sp.	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Salmonella sp.	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Yersinia sp.	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Campylobacter sp.	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Listeria sp.	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)

VEGETABLES

		Tomato (N=4)		Carrot (N=4)		Radish (N=4)		Lettuce (N=4)	
	Organism†	I	Sludge	I	Sludge	I	Sludge	I	Sludge
2012	Total coliforms	3.44 ± 3.21	2.89 ± 2.33	3.70 ± 3.54	3.48 ± 3.38	2.75 ± 2.20	2.92 ± 2.72	3.24 ± 2.77	3.53 ± 3.57
	E. coli	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	*Enterococcus**	2/4	2/4	0/4	0/4	1/4	1/4	4/4	4/4
	Fecal coliforms	BDL(4)	BDL(4)	D(1), BDL(3)	D(2), BDL(2)	BDL(4)	BDL(4)	2.26 ± 2.49, D(1)	4.04, 3.88, BDL(2)
	C. perfringens	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Aeromonas sp.	D(1), BDL(3)	BDL(4)	BDL(4)	D(1), BDL(3)	BDL(4)	D(1), BDL(3)	D(1), BDL(3)	BDL(4)
	Salmonella sp.	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Yersinia sp.	2.98 ± 2.88	2.69 ± 1.62	3.19 ± 2.94, D(1)	2.93, D(3)	2.67 ± 2.34	2.80 ± 2.50	BDL(4)	BDL(4)
	Campylobacter sp.	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Listeria sp.	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)

VEGETABLES

		Radish (N=8)		Lettuce		Carrots (N=8)	
	Organism†	Control	Sludge	Control (N=8)	Sludge (N=7)	Control	Sludge
2013	Total coliforms	2.72 ± 2.43, D(1)	2.82 ± 2.43, D(3)	3.27 ± 3.16	3.07 ± 3.02	2.49 ± 2.47, D(6)	2.56 ± 2.44
	Fecal coliforms	2.05, BDL(6)	D(1), BDL(7)	D(1), BDL(6)	BDL(8)	D(4), BDL(4)	2.13, D(3), BDL(4)
	E. coli	BDL(7)	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)
	Enterococcus	BDL(7)	BDL(8)	2.53, 2.55, D(3), BDL(2)	2.64 ± 2.60, D(1)	BDL(8)	BDL(8)
	Aeromonas	2.61 ± 2.45, D(2)	2.02 ± 1.28, D(2), BDL(3)	BDL(7)	3.04, 2.87, BDL(6)	2.08 ± 1.48, D(3), BDL(1)	2.77, 2.35, D(5), BDL(1)
	C. perfringens	BDL(7)	BDL(8)	BDL(7)	BDL(8)	BDL(8)	D(3), BDL(5)
	Yersinia	2.76 ± 2.71, D(2), BDL(2)	1.90, D(2), BDL(5)	2.88 ± 2.57, D(1)	3.23 ± 3.27, D(1)	2.66, 2.54, D(5)	2.54 ± 2.59, D(4)
	Campylobacter	BDL(7)	BDL(8)	BDL(7)	BDL(8)	BDL(8)	BDL(8)
	Salmonella	0/8	0/8	0/8	0/7	0/8	0/8
	Listeria	0/8	0/8	0/8	0/7	0/8	0/8

† Log10 CFU/g wet weight. * Organism was enumerated by enrichment, with the number of positive enrichments indicated.

Table S6. Abundance of antibiotic resistant total coliform bacteria in soils at harvest time. Soils were fertilized inorganically (I), or with dewatered municipal biosolids (Biosolids) or sewage sludge (Sludge). Plots were sampled in the year of application (2011 for biosolids, 2012 for sludge) and the sludge plots additionally sampled the following year (2013). Samples from biosolids-treated plots that are significantly different from controls are highlighted in bold. In cases where not all replicate samples were quantifiable the number of replicates with the indicated result is indicated in brackets. BDL = below detection limit. NT = not tested. D = detected but below the limit of quantification.

SOIL

		Vegetable Crop									
		Cucumber (N=4)		Tomato (N=4)		Pepper (N=4)		Carrot (N=4)		Radish (N=4)	
	Antibiotic	I	Biosolids	I	Biosolids	I	Biosolids	I	Biosolids	I	Biosolids
		Log10 CFU/g wet weight (Mean ± S.D.)									
2011	Control	4.19 ± 3.68	4.00 ± 4.05	2.56, 2.39, D(2)	3.52 ± 3.51	3.00 ± 2.90, D(1)	3.30 ± 3.36	3.44 ± 3.21	3.44 ± 2.99	2.27, 2.25, D(2)	3.91 ± 3.88, BDL(1)
		Percent Resistance (Mean ± S.D.)									
	Amikacin	D(1), BDL(3)	D(1), BDL(3)	D(1), BDL(3)	D(2), BDL(2)	D(1), BDL(3)	D(1), BDL(3)	BDL(4)	D(2), BDL(2)	13.8, 16.2, D, BDL	16.2, BDL(3)
	Augmentin	5.6 ± 3.1, D(1)	46.4 ± 77.6	D(3), BDL(1)	D(2), BDL(2)	BDL(4)	8.2, D(3)	D(4)	D(4)	D(2), BDL(2)	4.3, 12.3, D(2)
	Ampicillin	8.6, D(3)	11.1, D(3)	D(2), BDL(2)	42.2, 56.6, D(2)	D(4)	28.0, D(3)	115.8, 31.9, D(1), BDL(1)	73.2 ± 7.76, D(1)	D(4)	46.1 ± 18.3, D(1)
	Cefotaxime	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Cefoxitin	23.5 ± 22.4	119 ± 170	46.3, D(3)	18.8, 45.5, D(2)	D(3), BDL(1)	15.3, 44.9, D(1), BDL(1)	D(4)	376.7, D(3)	11.9, D(2), BDL(1)	BDL(4)
	Ceftiofur	BDL(4)	D(1), BDL(3)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Chloramphenicol	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	D(1), BDL(3)	D(1), BDL(3)
	Ciprofloxacin	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Gentamycin	63.3 ± 27.3	128 ± 50.5	27.0, 68.8, D(2)	57.5 ± 23.4	D(4)	78.5 ± 54.8, D(1)	80.8 ± 51.8	141 ± 59.0	80.9 ± 13.8, D(1)	82.5 ± 17.8
	Nitrofurantoin	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Norfloxacin	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Sulfamethoxazole	BDL(4)	D(1), BDL(3)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Tetracycline	BDL(4)	D(2), BDL(2)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Trimethoprim	BDL(4)	D(1), BDL(3)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Co-trimoxazole	BDL(4)	D(1), BDL(3)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Chlortetracycline	12.9 ± 11.6, D(1)	D(4)	BDL(4)	D(1), BDL(3)	BDL(4)	BDL(4)	BDL(4)	D(1), BDL(3)	17.0, BDL(3)	BDL(4)

		Tomato (N=4)		Carrot (N=4)		Radish (N=4)		Lettuce (N=4)	
	Antibiotic	I	Sludge	I	Sludge	I	Sludge	I	Sludge
		Log10 CFU/g wet weight (Mean ± S.D.)							
2012	Control	2.64, 2.86, D(2)	2.96 ± 0.16, D(1)	2.68, 3.46, D(2)	3.10 ± 0.27	2.72 ± 0.12, D(1)	3.20 ± 0.49	3.52 ± 0.49, D(1)	3.19 ± 0.13
		Percent Resistance (Mean ± S.D.)							
	Amikacin	D(2), BDL(2)	BDL(4)	BDL(4)	BDL(4)	D(1), BDL(3)	30.4, D(2), BDL(1)	BDL(4)	D(1), BDL(3)
	Augmentin	D(3), BDL(1)	D(4)	D(3)	67.6 ± 24.0, D(1)	D(3), BDL(1)	10.1, D(3)	131.4, 70.7, D(2)	46.8, 67.1, D(2)
	Ampicillin	D(4)	54.5, D(2), BDL(1)	D(3), BDL(1)	90.1, D(2), BDL(1)	D(2), BDL(2)	D(4)	103.5 ± 37.0, BDL(1)	37.1, 28.6, D(2)
	Cefotaxime	BDL(4)	D(1), BDL(3)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Cefoxitin	D(4)	87.5, 35.3, D(2)	D(3), BDL(1)	57.6 ± 21.7, D(1)	D(4)	32.1 ± 23.6, D(1)	41.4, D(3)	43.2 ± 11.2
	Ceftiofur	BDL(4)	D(1), BDL(3)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Chloramphenicol	BDL(4)	D(1), BDL(3)	BDL(4)	BDL(4)	BDL(4)	D(1), BDL(3)	BDL(4)	BDL(4)
	Ciprofloxacin	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Gentamycin	D(3), BDL(1)	D(1), BDL(3)	50.0, D(1), BDL(2)	44.8 ± 37.7, BDL(1)	D(4)	49.3 ± 25.4, D(1)	68.6, 153.4, D(2)	32.8 ± 13.0, D(1)
	Nitrofurantoin	BDL(4)	BDL(4)	BDL(4)	BDL(4)	D(1), BDL(3)	BDL(4)	BDL(4)	D(1), BDL(3)
	Norfloxacin	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Sulfamethoxazole	BDL(4)	D(1), BDL(3)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	D(2), BDL(2)
	Tetracycline	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	D(2), BDL(2)	BDL(4)	BDL(4)
	Trimethoprim	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	D(2), BDL(2)	BDL(4)	BDL(4)
	Co-trimoxazole	BDL(4)	D(1), BDL(3)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	D(2), BDL(2)
	Chlortetracycline	BDL(4)	D(3), BDL(1)	91.7, D(1), BDL(2)	53.6, 85.4, D(1), BDL(1)	D(3), BDL(1)	30.0 ± 37.1, BDL(1)	D(2), BDL(2)	58.6, 35.4, D(1), BDL(1)

	Antibiotic	Carrot (N=8) I	Carrot (N=8) Sludge	Radish (N=8) I	Radish (N=8) Sludge	Lettuce (N=8) I	Lettuce (N=8) Sludge
		Log10 CFU/g wet weight (Mean ± S.D.)					
2013	Control	3.31 ± 0.288	3.47 ± 0.320	2.60, D(7)	3.45, D(7)	3.72 ± 0.336	3.82 ± 0.410, BDL(1)
		Percent Resistance (Mean ± S.D.)					
	Amikacin	D(2), BDL(6)	D(2), BDL(6)	D(1), BDL(3)	BDL(8)	12.9 ± 7.1, D(1), BDL(3)	BDL(8)
	Augmentin	66.9 ± 22.0, D(1)	80.0 ± 10.4	D(3), BDL(1)	D(4), BDL(4)	41.0 ± 19.3, D(1)	36.9 ± 20.4, BDL(1)
	Ampicillin	46.4 ± 16.3, D(1)	**79.2 ± 15.0**	D(2), BDL(2)	D(3), BDL(5)	19.0 ± 20.0, D(6)	24.7 ± 11.2, D(1), BDL(2)
	Cefotaxime	BDL(8)	BDL(8)	BDL(4)	BDL(8)	BDL(8)	BDL(8)
	Cefoxitin	36.5 ± 17.1, D(3)	4.70, D(7)	D(4)	D(3), BDL(5)	58.6 ± 23.9, D(1)	41.0 ± 26.4, D(1), BDL(1)
	Ceftiofur	103 ± 14.7	104 ± 20.8	BDL(4)	D(7), BDL(1)	32.3 ± 36.7, BDL(5)	52.6 ± 31.0, BDL(2)
	Chloramphenicol	BDL(8)	BDL(8)	BDL(4)	BDL(8)	BDL(8)	BDL(8)
	Ciprofloxacin	BDL(8)	BDL(8)	BDL(4)	BDL(8)	BDL(8)	BDL(8)
	Gentamycin	36.3 ± 10.0, D(3), BDL(1)	41.2 ± 19.7	D(4)	D(3), BDL(5)	31.6 ± 21.0, BDL(1)	12.0 ± 5.6, D(1), BDL(4)
	Nitrofurantoin	BDL(8)	BDL(8)	D(1), BDL(3)	BDL(8)	BDL(8)	BDL(8)
	Norfloxacin	BDL(8)	BDL(8)	BDL(4)	BDL(8)	BDL(8)	BDL(8)
	Sulfamethoxazole	BDL(8)	BDL(8)	BDL(4)	BDL(8)	BDL(8)	BDL(8)
	Tetracycline	BDL(8)	BDL(8)	BDL(4)	BDL(8)	BDL(8)	BDL(8)
	Trimethoprim	BDL(8)	BDL(8)	BDL(4)	BDL(8)	BDL(8)	BDL(8)
	Co-trimoxazole	BDL(8)	BDL(8)	BDL(4)	BDL(8)	BDL(8)	BDL(8)
	Chlortetracycline	D(1), BDL(7)	BDL(8)	D(3), BDL(1)	BDL(8)	BDL(8)	BDL(8)

Table S7. Abundance of antibiotic resistant coliform bacteria on vegetables at harvest. Soils were fertilized inorganically (I), or with dewatered municipal biosolids (Biosolids) or sewage sludge (Sludge). Plots were sampled in the year of application (2011 for biosolids, 2012 for sludge) and the sludge plots additionally sampled the following year (2013). Significant differences for fertilizer treatment for a given crop is indicated with an asterisk. NT = not tested in that particular year.

VEGETABLES

		Vegetable Crop											
		Cucumber (N=4)		Tomato (N=4)		Pepper (N=4)		Carrot (N=4)		Radish (N=4)		Lettuce	
	Antibiotic	I	Biosolids	I	Biosolids	I	Biosolids	I	Biosolids	I	Biosolids	I	Biosolids
		Log10 CFU/g wet weight (Mean ± S.D.)											
2011	Control†	3.26 ± 3.33, D(1)	D(4)	1.46, D(3)	1.45, D(3)	4.44 ± 4.38	4.37 ± 4.35	4.29 ± 4.28	3.71 ± 3.45	1.78, 1.30, D, BDL	D(4)	NT	NT
		Percent Resistance (Mean ± S.D.)											
	Amikacin	BDL(4)	(D1),BDL(3)	BDL(4)	D(2), BDL(2)	D(3), BDL(1)	BDL(4)	D(1), BDL(3)	D(1), BDL(3)	13.8, D(2), BDL	13.8, 16.2, BDL(2)	NT	NT
	Augmentin	100, BDL(3)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	53.9 ± 40.6, D(1)	92.0 ± 66.9, D(1)	BDL(4)	BDL(4)	NT	NT
	Ampicillin	64.6, BDL(3)	BDL(4)	BDL(4)	BDL(4)	D(1), BDL(3)	3.3, 12.4, D(2)	61.5 ± 41.3, BDL(1)	39.6 ± 29.0, D(1)	BDL(4)	BDL(4)	NT	NT
	Cefotaxime	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	NT	NT
	Cefoxitin	118, BDL(3)	D(1), BDL(3)	BDL(4)	D(1), BDL(3)	11.4, BDL(3)	BDL(4)	80.0 ± 115, D(1)	114 ± 66.0	D(1), BDL(3)	BDL(4)	NT	NT
	Ceftiofur	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	NT	NT
	Chloramphenicol	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	NT	NT
	Ciprofloxacin	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	NT	NT
	Gentamycin	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	NT	NT
	Nitrofurantoin	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	NT	NT
	Norfloxacin	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	NT	NT
	Sulfamethoxazole	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	NT	NT
	Tetracycline	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	NT	NT
	Trimethoprim	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	NT	NT
	Co-trimoxazole	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	NT	NT
	Chlortetracycline	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	NT	NT

		Tomato (N=4)		Carrot (N=4)		Radish (N=4)		Lettuce (N=4)	
	Antibiotic	I	Sludge	I	Sludge	I	Sludge	I	Sludge
		Log10 CFU/g wet weight (Mean ± S.D.)							
2012	Control†	2.77 ± 0.10	2.93 ± 0.29	3.53 ± 0.25	3.33 ± 0.47	2.70, D(3)	2.76, D(3)	5.56 ± 0.13	5.19 ± 0.20
		Percent Resistance (Mean ± S.D.)							
	Amikacin	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Augmentin	D(1), BDL(3)	BDL(4)	57.4 ± 33.2, D(1)	83.3 ± 12.2, D(1)	D(2), BDL(2)	D(4)	11.4 ± 18.8, D(1)	5.0 ± 3.9
	Ampicillin	113.8, D(1), BDL(2)	D(2), BDL(2)	13.6, 53.1, D(2)	22.1, D(3)	D(1), BDL(3)	D(2), BDL(2)	12.1 ± 19.8	7.4 ± 2.0
	Cefotaxime	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Cefoxitin	D(1), BDL(3)	D(4)	48.8 ± 16.2, D(1)	**85.7 ± 7.6**	D(3), BDL(1)	D(3), BDL(1)	12.3 ± 16.9	6.8 ± 6.1
	Ceftiofur	BDL(4)	BDL(4)	BDL(4)	D(1), BDL(3)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Chloramphenicol	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Ciprofloxacin	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Gentamycin	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Nitrofurantoin	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Norfloxacin	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Sulfamethoxazole	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Tetracycline	D(1), BDL(3)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Trimethoprim	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Co-trimoxazole	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)	BDL(4)
	Chlortetracycline	BDL(4)	BDL(4)	65.9 ± 28.7, D(1)	40.5, 76.7, D(2)	BDL(4)	D(2), BDL(2)	2.4, 46.9, D(1), BDL(1)	4.7 ± 5.4, D(1)

	Antibiotic	Carrot (N=8) I	Carrot (N=8) Sludge	Radish (N=8) I	Radish (N=8) Sludge	Lettuce (N=8) I	Lettuce (N=8) Sludge
		Log10 CFU/g wet weight (Mean ± S.D.)					
2013	Control†	2.76 ± 0.540, D(1), BDL(1)	3.16 ± 0.331, BDL(1)	2.49 ± 0.528, D(4), BDL(1)	2.21 ± 0.260, D(2)	3.23 ± 0.263, BDL(1)	3.13 ± 0.300
		Percent Resistance (Mean ± S.D.)					
	Amikacin	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)
	Augmentin	53.8 ± 16.4, D(1), BDL(1)	54.9 ± 21.7, BDL(1)	D(2), BDL(6)	D(1), BDL(7)	72.5 ± 46.2, BDL(1)	41.8 ± 41.7, D(1)
	Ampicillin	52.2 ± 31.9, D(3), BDL(1)	18.3 ± 12.2, D(2), BDL(1)	D(3), BDL(5)	77.8, D(3), BDL(4)	54.9 ± 39.8, BDL(1)	65.3 ± 39.0, D(1)
	Cefotaxime	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)
	Cefoxitin	53.3 ± 27.4, BDL(2)	72.0 ± 11.2, BDL(1)	139, D(2), BDL(5)	D(3), BDL(5)	32.5 ± 35.1, D(1), BDL(1)	39.1 ± 29.2, D(1), BDL(1)
	Ceftiofur	88.3 ± 35.1, D(1), BDL(1)	80.1 ± 14.8, BDL(1)	150, 118, D(3), BDL(3)	128, D(2), BDL(5)	32.7 ± 20.4, BDL(5)	60.8, BDL(7)
	Chloramphenicol	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)
	Ciprofloxacin	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)
	Gentamycin	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)
	Nitrofurantoin	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)
	Norfloxacin	D(1), BDL(7)	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)
	Sulfamethoxazole	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)
	Tetracycline	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)
	Trimethoprim	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)
	Co-trimoxazole	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)
	Chlortetracycline	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)	BDL(8)

Table S8. Distribution of gene targets in organic amendments, biosolids applied in 2011 and sewage sludge applied in 2012. Detection in DNA extracts of amended or unamended control soil sampled at time of vegetable harvest. The 2013 samples are from plots treated with sludge in the spring of 2012. There were 20 independent soil samples taken in 2011, 16 in 2012 and 23/24 in 2013. n/a = Not applicable. An asterisk indicates the target was not evaluated in 2011.

Targeted genes	**Amendment**			**Treated soil (% detect)**				**Control soil (% detect)**		
	2011	**2012**		**2011 (n=20)**	**2012 (n=16)**	**2013 (n=24)**		**2011 (n=20)**	**2012 (n=16)**	**2013 (n=23)**
Incompatibility										
IncA/C	-	+		n/a	6.25	0		n/a	18.75	4.35
IncB/O	-	-		n/a	n/a	n/a		n/a	n/a	n/a
IncFIA	-	-		n/a	n/a	n/a		n/a	n/a	n/a
IncFIIA	-	-		n/a	n/a	n/a		n/a	n/a	n/a
IncFIB	-	+		n/a	0	0		n/a	0	0
IncFIC	-	-		n/a	n/a	n/a		n/a	n/a	n/a
IncF *rep*	-	-		n/a	n/a	n/a		n/a	n/a	n/a
IncHII	-	-		n/a	n/a	n/a		n/a	n/a	n/a
IncHI2	-	-		n/a	n/a	n/a		n/a	n/a	n/a
IncI1	-	-		n/a	n/a	n/a		n/a	n/a	n/a
IncK/B	-	-		n/a	n/a	n/a		n/a	n/a	n/a
IncL/M	-	-		n/a	n/a	n/a		n/a	n/a	n/a
IncN	-	+		n/a	31.25	0		n/a	25	0
IncN *kik*A	-	-		n/a	n/a	n/a		n/a	n/a	n/a
IncN *ori*T	-	-		n/a	n/a	n/a		n/a	n/a	n/a
IncN *rep*	-	-		n/a	n/a	n/a		n/a	n/a	n/a
IncP *kor*A	-	+		n/a	0	0		n/a	0	0
IncP *ori*T	+	+		80	75	66		80	75	86
IncP *tra*G	-	-		n/a	n/a	n/a		n/a	n/a	n/a
IncP *trf*A1	+	-		55	n/a	0		60	n/a	0
IncP *trf*A2	-	+		n/a	0	4.2		n/a	0	0
IncQ *rep*B	-	+		n/a	0	0		n/a	0	0
IncQ *ori*T	+	+		0	0	25		0	0	26
IncQ *oriV*	-	+		n/a	37.5	0		n/a	25	0
IncT	-	-		n/a	n/a	n/a		n/a	n/a	n/a
IncW	-	+		n/a	68.8	8.3		n/a	81.2	0
IncW *ori*T	-	-		n/a	n/a	n/a		n/a	n/a	n/a
IncW *ori*V	-	+		n/a	12.5	0		n/a	12.5	0
IncW *trw*AB	-	-		n/a	n/a	0		n/a	n/a	0
IncX	-	-		n/a	n/a	n/a		n/a	n/a	n/a
IncY	-	+		n/a	0	0		n/a	0	0
Integrase										
int1	+	+		55	81.25	0		25	25	0
int2	-	+		n/a	0	0		n/a	0	0
int3	+	+		20	12.5	8.3		5	0	16
Antibiotic resistance										
tet(A)	-	+		n/a	68.75	0		n/a	56.25	0
tet(B)	-	-		n/a	n/a	0		n/a	n/a	0
tet(B/P)	-	+		n/a	0	0		n/a	0	0

tet(C)	-	-		n/a	n/a	n/a		n/a	n/a	n/a
tet(M)	-	+		n/a	0	0		n/a	0	0
tet(O)	-	-		n/a	n/a	0		n/a	n/a	0
tet(Q)	+	+		0	0	0		0	0	0
tet(S)	+	+		0	12.5	0		0	25	0
tet(T)	+	+		20	25	20.8		25	6.25	17.4
aad(A)	+	+		55	87.5	33.3		60	81.25	30.4
str(A)	+	+		75	62.5	12.5		45	43.75	8.7
str(B)	+	+		65	56.25	0		30	25	4.4
vga	-	-		n/a	n/a	n/a		n/a	n/a	n/a
vat(B)	-	-		n/a	n/a	n/a		n/a	n/a	n/a
vgb	-	-		n/a	n/a	n/a		n/a	n/a	n/a
sul1	+	+		90	100	29.17		30	87.5	34.78
sul2	+	-		35	n/a	n/a		30	n/a	n/a
sul3	-	+		n/a	0	0		n/a	0	0
erm(A)	+	+		5	0	0		5	0	0
erm(B)	+	+		35	50	0		10	43.75	0
erm(C)	+	+		0	12.5	4.17		15	6.25	0
erm(E)	-	-		n/a	n/a	n/a		n/a	n/a	n/a
erm(F)	+	+		10	12.5	12.5		0	0	12.5
msr(A)	-	+		n/a	0	0		n/a	0	0
msr(B)	-	-		n/a	n/a	n/a		n/a	n/a	n/a
*bla*CARB-4	-	-		n/a	n/a	n/a		n/a	n/a	n/a
*bla*CTX-M*	n/a	+		n/a	0	0		n/a	12.5	0
*bla*GIM-1	-	-		n/a	n/a	n/a		n/a	n/a	n/a
*bla*IMP*	n/a	-		n/a	n/a	n/a		n/a	n/a	n/a
*bla*IMP-1	-	-		n/a	n/a	n/a		n/a	n/a	n/a
*bla*KPC-m*	n/a	-		n/a	n/a	n/a		n/a	n/a	n/a
*bla*NDM-1*	n/a	-		n/a	n/a	n/a		n/a	n/a	n/a
*bla*OXA-18	-	-		n/a	n/a	n/a		n/a	n/a	n/a
*bla*OXA-20	+	+		0	31.25	0		0	12.5	0
*bla*OXA-48*	n/a	-		n/a	n/a	n/a		n/a	n/a	n/a
*bla*OXAV	+	-		5	n/a	n/a		0	n/a	n/a
*bla*OXAI	+	+		0	43.75	16.67		5	31.25	0
*bla*OXAII	+	-		0	n/a	n/a		0	n/a	n/a
*bla*OXAIII	-	-		n/a	n/a	n/a		n/a	n/a	n/a
*bla*LCR-1	+	+		0	0	0		0	6.25	0
blaPSE	-	+		n/a	6.25	0		n/a	31.25	0
*bla*SHV	-	-		n/a	n/a	n/a		n/a	n/a	n/a
*bla*SPM-1	-	-		n/a	n/a	n/a		n/a	n/a	n/a
blaTEM*	n/a	+		n/a	50	33.33		n/a	37.5	34.78
*bla*VIM*	n/a	-		n/a	n/a	n/a		n/a	n/a	n/a
*bla*VIMgen-2	-	+		n/a	75	25		n/a	75	26
*qnr*A	-	+		n/a	0	0		n/a	0	0
*qnr*B	+	+		0	12.5	0		0	0	0
*qnr*S	-	+		n/a	43.75	0		n/a	37.5	0
*fos*A-2	+	+		35	37.5	4.17		40	37.5	0
*van*A	-	-		n/a	n/a	n/a		n/a	n/a	n/a

*van*B	-	-		n/a	n/a	n/a		n/a	n/a	n/a
*van*C1	-	-		n/a	n/a	n/a		n/a	n/a	n/a
*van*C2/C3	-	+		n/a	31.25	4.17		n/a	37.5	0

Table S9: Frequency of gene target detection in DNA isolated from vegetables at harvest. Vegetables were grown in plots with inorganic fertilizer only, or with biosolids in 2011 (A) or sludge in 2012 (B). Vegetables were grown in 2013 in the plots treated with sludge in 2012 (C).

A

Targeted genes	2011 untreated control					2011 biosolids applied				
	Tomato (n=4)	Pepper (n=4)	Cucumber (n=4)	Carrot (n=4)	Radish (n=4)	Tomato (n=4)	Pepper (n=4)	Cucumber (n=4)	Carrot (n=4)	Radish (n=3)
Incompatibility										
IncP *oriT*	4	2	0	4	0	3	3	0	4	0
IncP *trfA1*	0	4	0	0	0	2	2	0	0	0
IncQ *oriT*	0	0	0	0	0	0	0	0	0	0
Integrase										
int1	0	0	0	0	3	0	0	0	0	3
int3	0	0	0	0	0	0	0	0	1	0
Antibiotic resistance										
tet(Q)	0	0	0	0	0	0	0	0	0	0
tet(S)	0	0	0	0	0	0	0	0	0	0
tet(T)	1	4	0	0	0	0	4	1	0	0
aad(A)	0	4	3	0	0	0	4	3	0	0
str(A)	1	0	2	0	2	0	0	0	1	1
str(B)	1	0	1	0	1	0	1	0	2	1
sul1	0	0	1	0	0	0	2	2	0	0
sul2	3	2	0	0	0	2	2	0	0	0
erm(A)	0	0	0	0	0	0	0	0	0	0
erm(B)	1	1	2	0	0	1	2	2	0	0
erm(C)	0	2	0	0	0	1	1	1	0	0
erm(F)	0	0	0	0	0	0	0	0	0	0
bla_{OXAI}	0	4	0	0	0	0	4	0	0	0
bla_{OXAII}	0	0	0	0	0	0	0	0	0	0
bla_{OXAV}	0	0	0	0	0	0	0	0	0	0
bla_{OXA-20}	0	0	0	0	0	0	0	0	0	0
$bla_{OXAIcrf}$	0	0	0	0	0	0	0	0	0	0
qnr(B)	0	0	0	0	0	0	0	0	0	0
fos(A)	4	2	0	3	1	4	2	0	4	0

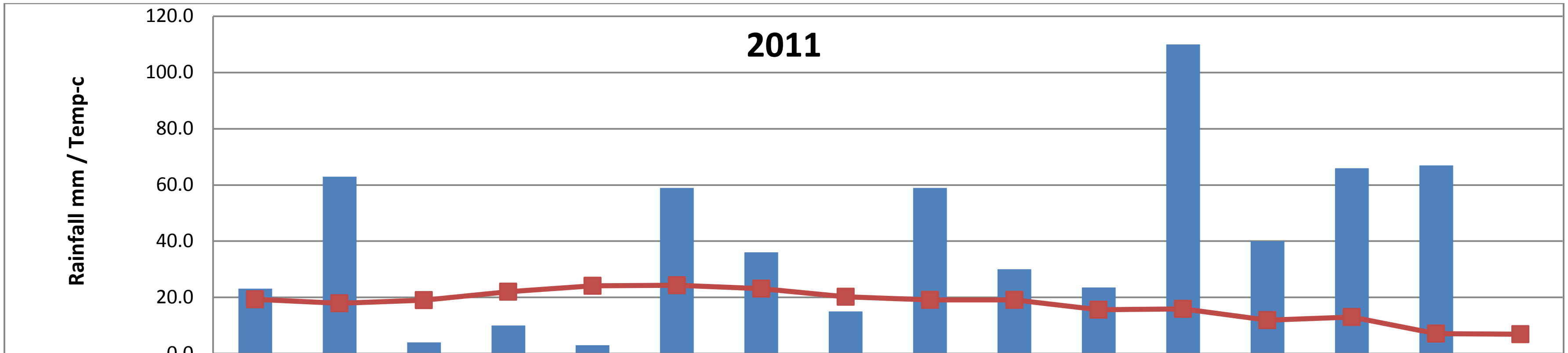
B

Targeted genes	2012 untreated control				2012 sludge applied			
	Lettuce (n=4)	Tomato (n=4)	Radish (n=4)	Carrot (n=4)	Lettuce (n=4)	Tomato (n=4)	Radish (n=4)	Carrot (n=4)
Incompatibility								
IncA/C	0	1	1	1	0	1	0	1
IncF1B	0	0	0	0	0	0	0	0
IncN	0	0	3	4	0	0	3	4
IncP *oriT*	3	4	4	4	4	2	4	3
IncP *trfA2*	0	0	0	0	0	0	0	0
IncP *korA*	0	0	0	0	0	0	0	0
IncQ *repB*	0	0	0	0	0	0	0	0
IncQ *oriV*	0	0	0	3	0	0	0	3
IncQ *oriT*	0	0	0	0	0	0	0	0
IncW *oriV*	0	0	3	4	0	0	1	3
IncY	2	2	4	3	2	1	4	4
Integrase								
int1	0	4	3	3	0	1	3	3
int2	0	0	0	0	0	0	0	0
int3	0	0	0	0	0	0	0	0
Antibiotic resistance								
tet(A)	2	2	3	4	4	1	2	2
tet(B)	0	0	0	0	0	0	0	0
tet(M)	0	0	0	0	0	0	0	0
tet(Q)	0	0	0	0	0	0	0	0
tet(S)	2	0	1	2	2	0	2	1
tet(T)	0	0	2	0	0	0	0	0
aad(A)	4	0	1	2	4	2	1	2
str(A)	0	3	0	1	2	3	2	3
str(B)	0	3	0	1	1	0	1	3
sul1	4	4	3	3	4	4	2	3
sul3	0	0	0	0	0	0	0	0
erm(A)	0	0	0	0	0	0	0	0
erm(B)	4	2	0	0	4	3	0	1
erm(C)	0	0	0	1	0	0	1	0
erm(F)	0	0	0	0	0	0	0	0
msr(A)	0	0	0	0	0	0	0	0
bla_{TEM}	4	1	0	1	4	1	0	1
$bla_{\text{CTX-M}}$	1	0	0	0	1	1	0	0
bla_{OXA1}	3	4	0	0	3	3	0	0
$bla_{\text{OXA-20}}$	0	0	0	0	3	0	2	2
bla_{OXA1crf}	0	0	0	0	0	0	0	0
bla_{PSE}	0	0	1	0	0	0	1	2
Bla_{VIMgen}	0	3	4	4	0	4	3	4
qnr(A)	0	0	0	0	0	0	0	0
qnr(B)	0	0	0	3	0	0	0	2
qnr(S)	0	0	4	4	0	0	2	4
fos(A)	3	0	2	3	1	0	3	4
van(C2)	0	0	3	4	0	0	3	4

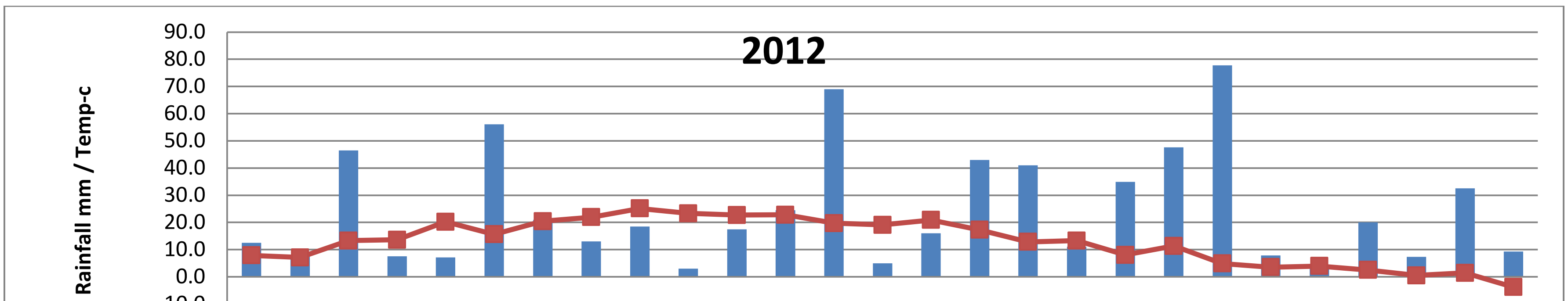
C

Targeted genes	2013 untreated control				2013 sludge applied (in 2012)			
	Lettuce (n=8)	Tomato (N/A)	Radish (n=7)	Carrot (n=8)	Lettuce (n=8)	Tomato (N/A)	Radish (n=8)	Carrot (n=8)
Incompatibility								
IncA/C	0	N/A	0	1	0	N/A	0	1
IncF1B	0	N/A	0	0	0	N/A	0	0
IncN	0	N/A	0	0	0	N/A	0	0
IncP *oriT*	8	N/A	7	8	8	N/A	7	8
IncP *trfA2*	0	N/A	1	0	0	N/A	2	0
IncP *korA*	0	N/A	0	0	0	N/A	0	0
IncQ *repB*	0	N/A	0	0	0	N/A	0	0
IncQ *oriV*	0	N/A	0	3	1	N/A	0	6
IncQ *oriT*	1	N/A	2	6	1	N/A	2	8
IncW *oriV*	0	N/A	0	1	0	N/A	0	1
IncY	0	N/A	0	0	0	N/A	0	0
Integrase								
int1	0	N/A	0	0	0	N/A	0	0
int2	0	N/A	0	0	0	N/A	0	0
int3	0	N/A	0	3	0	N/A	0	1
Antibiotic resistance								
tet(A)	0	N/A	0	0	0	N/A	0	0
tet(B)	6	N/A	0	0	3	N/A	2	0
tet(M)	0	N/A	0	0	0	N/A	0	0
tet(Q)	0	N/A	0	0	0	N/A	0	0
tet(S)	0	N/A	0	0	0	N/A	0	0
tet(T)	2	N/A	2	0	0	N/A	4	0
aad(A)	0	N/A	0	7	0	N/A	0	8
str(A)	0	N/A	0	2	0	N/A	0	1
str(B)	0	N/A	0	0	0	N/A	0	0
sul1	0	N/A	0	2	0	N/A	0	3
sul3	0	N/A	0	0	0	N/A	0	0
erm(A)	0	N/A	0	0	0	N/A	0	0
erm(B)	0	N/A	0	2	0	N/A	0	1
erm(C)	0	N/A	0	3	0	N/A	0	5
erm(F)	2	N/A	1	2	2	N/A	2	1
msr(A)	0	N/A	0	0	0	N/A	0	0
bla_{TEM}	0	N/A	0	7	0	N/A	0	8
bla_{CTX-M}	0	N/A	0	0	0	N/A	0	0
bla_{OXA1}	0	N/A	2	2	2	N/A	2	0
bla_{OXA-20}	0	N/A	0	0	0	N/A	0	0
$bla_{OXA1crf}$		N/A				N/A		
bla_{PSE}	0	N/A	0	1	0	N/A	1	0
Bla_{VIMgen}	0	N/A	0	3	0	N/A	0	3
qnr(A)	0	N/A	0	0	0	N/A	0	0
qnr(B)	0	N/A	0	0	0	N/A	0	0
qnr(S)	0	N/A	0	0	0	N/A	0	0
fos(A)	0	N/A	0	5	0	N/A	0	7
van(C2)	1	N/A	0	0	1	N/A	0	0

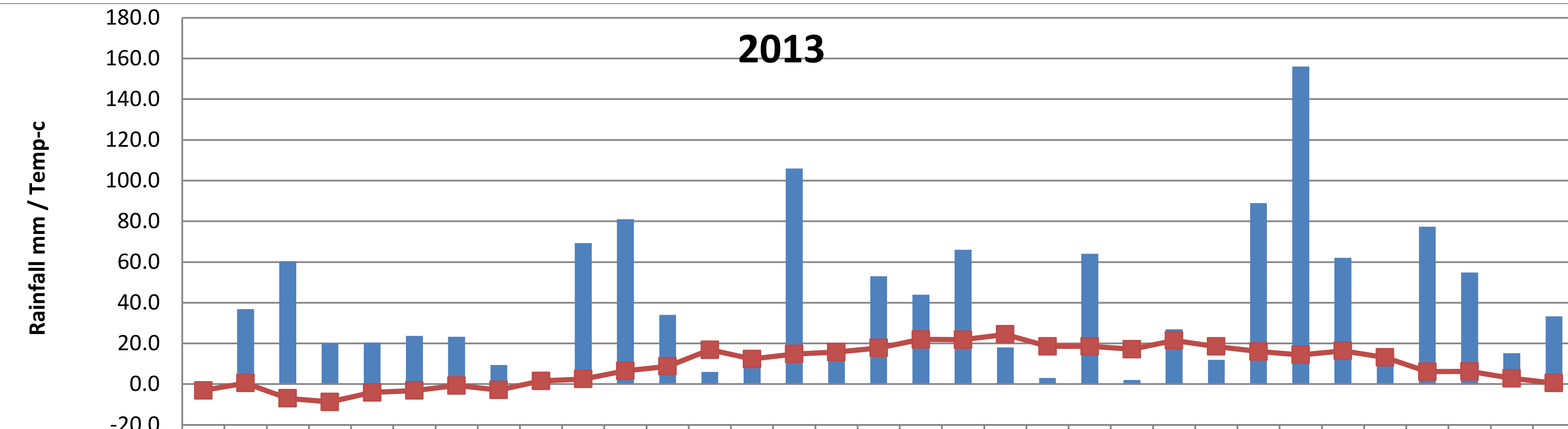
Fig S1. Climate conditions during the three seasons of observation in the present study.



JULIAN DAYS	152-161	162-171	172-181	182-191	192-201	202-211	212-221	222-231	232-241	242-251	252-261	262-271	272-281	282-291	292-301	302-311
TOTAL RAIN	23.1	63.0	4.0	10.0	3.0	59.0	36.0	15.0	59.0	30.0	23.5	110.0	40.0	66.0	67.0	0.0
AVG TEMP	19.3	17.9	19.0	22.0	24.1	24.3	23.1	20.2	19.1	19.1	15.6	15.9	11.9	13.0	7.1	6.9



JULIAN DAYS	100-109	110-119	120-129	130-139	140-149	150-159	160-169	170-179	180-189	190-199	200-209	210-219	220-229	230-239	240-249	250-259	260-269	270-279	280-289	290-299	300-309	310-319	320-329	330-339	340-349	350-359	360-366
TOTAL RAIN	12.5	8.1	46.5	7.5	7.1	56.1	21.0	13.0	18.5	3.0	17.5	24.5	69.0	5.0	16.0	43.0	41.0	11.0	34.9	47.6	77.8	7.8	3.6	20.0	7.3	32.5	9.3
AVG TEMP	7.9	7.1	13.3	13.6	20.2	15.6	20.4	21.9	25.1	23.3	22.7	22.8	19.7	19.1	20.9	17.3	12.8	13.3	8.1	11.4	4.9	3.6	4.0	2.5	0.5	1.4	-3.8



JULIAN DAYS	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-160	161-170	171-180	181-190	191-200	201-210	211-220	221-230	231-240	241-250	251-260	261-270	271-280	281-290	291-300	301-310	311-320	321-330
TOTAL RAIN	0.9	36.9	60.3	20.0	20.4	23.7	23.3	9.4	2.4	69.3	81.0	34.0	6.0	12.0	106.	13.0	53.0	44.0	66.0	18.0	3.0	64.0	2.0	27.0	12.0	89.0	156.	62.0	12.6	77.4	54.9	15.2	33.3
AVG TEMP	-3.1	0.5	-7.0	-8.8	-4.1	-3.2	-0.7	-2.9	1.6	2.5	6.6	8.8	16.8	12.4	14.8	15.7	17.8	22.0	21.8	24.4	18.5	18.6	17.2	21.5	18.5	16.0	14.4	16.4	13.1	6.1	6.2	2.9	0.5