

**Table S1.** Summary of the number of piglets, type and quantity of antibiotics, and reasons for piglet antibiotic treatments in the participating barns.

Numbers of piglets	Type of antibiotics	Reason for treatment						Quantity of antibiotics used	
		Infection	Injury	Limping	Poor-doers	Respiratory	Scours	mg	percent/ty pe
Non-RWA									
Piglets (N=14,312)	Antifolates	19,176	84,408	1,511,155	144,000	102,450	1,516,238	3,377,428	64%
	β-lactams	343,770	1,058	95,645	6,920	18,993	119,860	586,245	11%
	Tetracycline	0	600	2,000	5,700	300	1,322,540	1,331,140	25%
Total antibiotics (mg)		1,608,800						5,294,813	
Antibiotics percent/reason		362,946	86,066	0	156,620	121,743	2,958,638		
		7%	2%	30%	3%	2%	56%		
RWA									
Piglets (N=1,697)	Antifolates	3,936	22,020	193,524	33,108	516	2,880	255,984	30%
	β-lactams	81,770	245,685	130,820	1,275	900	1,800	462,250	54%
	Chloramphenicol	6,075	5,175	98,700	900	0	0	110,850	13%
	Tetracycline	1,600	16,350	11,950	1,100	750	0	31,750	4%
Total antibiotics (mg)		93,381	289,230	434,994	36,383	2,166	4,680	860,834	
Antibiotics percent/reason		11%	34%	51%	4%	0%	1%		



Firmicutes	Bacilli	Streptococcus caballi DSM 19004	RG2	RG2	0	3297	0	0	0	0	3297	0	0	0	
		Streptococcus gallolyticus subsp. gallolyticus	RG2	RG2	0	7478	2495	3264	1031	163	7478	2001	8631	92	
		Streptococcus equinus JB1	RG2	RG2	0	8524	1291	3336	1185	1391	8524	5277	13617	0	
		Streptococcus equi subsp. zooepidemicus BHS5	RG2	RG2	0	2137	3279	830	677	689	2137	0	733	647	
		Streptococcus agalactiae	RG2	RG2	196	138	385	73	126	101	138	22	82	0	
		Streptococcus infantarius subsp. infantarius	RG1	RG2	171	2434	841	1755	380	273	2434	1190	5447	483	
		Streptococcus lutetiensis 033	RG2	RG2	991	33886	12325	16173	5716	2663	33886	11261	50561	3174	
		Streptococcus parauberis	RG1	RG2	0	399	0	0	0	0	399	0	0	0	
		Streptococcus pneumoniae 1488	RG2	RG2	0	0	0	0	0	0	0	0	0	0	
		Streptococcus pasteurianus ATCC 43144	RG2	RG2	0	1165	499	541	0	0	1165	0	0	0	
		Streptococcus suis GZ1	RG2	RG2	5213	5101	11869	9887	5740	3595	5101	5420	1966	1986	
	Tissierellia	Anaerococcus prevotii	RG2	RG1	0	13	0	0	0	0	13	0	0	0	
		Finegoldia magna	RG2	RG2	0	82	0	0	0	0	82	0	0	0	
	Clostridia	Erysipelothrix rhusiopathiae	RG2	RG2	0	92	0	0	0	0	92	0	0	0	
		Pseudoflavonifractor capillosus ATCC 29799	RG2	RG2	29283	0	0	7213	36960	14422	0	3250	0	7676	
		Faecalibacterium cf. prausnitzii KLE1255	RG2	RG2	0	0	0	0	108835	0	0	135186	0	157946	
		Flavonifractor plautii ATCC 29863	RG2	RG2	4124	2929	1446	2057	2456	1811	2929	787	96	38	
		Clostridium botulinum	RG2	RG2	0	0	0	0	0	0	0	0	0	0	
		Clostridium butyricum	RG2	RG2	61	48652	128	19443	34521	34147	48652	13549	26907	14672	
		Clostridium cadaveris AGR2141	RG2	RG1	0	1443	0	0	0	0	1443	0	0	0	
		Clostridioides difficile 6534	RG2	RG2	1287	1026	4998	772	0	1115	1026	833	2022	0	
		Paeniclostridium sordellii	RG2	RG2	0	191	0	388	0	0	191	371	0	0	
		Peptostreptococcus anaerobius	RG2	RG2	0	1116	0	0	0	0	1116	0	0	0	
		Terrisporobacter glycolicus ATCC 14880 = DSM 1288	RG2	RG2	0	3992	0	3040	1607	0	3992	4502	0	0	
		Clostridium orbiscindens 1_3_50AFAA	RG2	RG2	0	0	1006	0	914	0	0	0	0	798	
		Clostridium perfringens C str. JGS1495	RG2	RG2	0	2094	98	496	204	0	2094	274	0	0	
		Eubacterium ventriosum ATCC 27560	RG2	RG2	0	0	0	0	0	0	0	0	0	3163	
		Clostridium symbiosum	RG2	RG1	0	0	0	0	0	0	0	0	0	13	
		Catonella morbi ATCC 51271	RG2	RG1	3523	0	0	0	0	0	0	0	0	0	
		Actinobacteria	Actinobacteria	Trueperella pyogenes TP8	RG2	RG2	0	1231	0	0	0	0	1231	0	0
	Bifidobacterium sp. AGR2158			RG2	RG1	0	0	11062	0	0	0	0	0	0	0
	Coriobacteriia		Olsenella uli	RG2	RG2	0	723	2160	988	0	0	723	0	0	0
			Collinsella aerofaciens ATCC 25986	RG2	RG1	0	0	0	31832	10960	0	0	16948	48193	16933
Eggerthella lenta			RG2	RG2	0	399	0	0	0	0	399	0	0	0	
Chlamydiae	Chlamydiia	Chlamydia suis MD56	RG2	RG2	0	80686	716	45601	64283	1293	80686	60192	1112	14308	
		Chlamydia muridarum MopnTet14	RG1	RG2	0	355	0	0	0	0	355	655	0	0	
Spirochaetes	Spirochaetia	Brachyspira murdochii DSM 12563	RG2	RG2	0	0	0	0	0	0	0	0	4849	0	
Fusobacteria	Fusobacteriia	Fusobacterium varium ATCC 27725	RG2	RG2	0	791	0	0	0	0	791	0	0	0	
		Fusobacterium necrophorum	RG2	RG2	0	6	0	0	0	0	6	0	0	0	
Total					259793	479583	1206943	676912	440152	191065	479583	616381	2050840	405722	

Table S3. Pathome – List of pathogens detected in manure.

Phylum	Class	Specie-Strain	RG Human	RG Animal	nonRWA Manure					RWA Manure				
					Nov-18	May-19	Nov-19	May-20	Nov-20	Nov-18	May-19	Nov-19	May-20	Nov-20
Proteobacteria	<b>α-proteobacteria</b>	<i>Paracoccus sanguinis</i>	RG2	RG2	1	0	0	0	0	411	0	0	0	65
	<b>γ-proteobacteria</b>	<i>Escherichia coli</i> O157:H7 str. 2011EL-2	RG3	RG3	1	0	0	0	0	1	0	0	0	1221
		<i>Acinetobacter baumannii</i> 573719	RG2	RG1	1	224	153	153	102	2182	224	0	26	32
		<i>Acinetobacter johnsonii</i>	RG1	RG2	1	0	261	0	0	1	0	0	0	333
		<i>Acinetobacter junii</i>	RG2	RG2	1	0	0	0	0	1	0	0	0	24
		<i>Actinobacillus minor</i>	RG2	RG2	1	0	0	0	0	1	0	216	0	0
		<i>Acinetobacter lwoffii</i> NCTC 5866 = CIP	RG2	RG1	1	0	0	0	830	1	0	0	0	1858
		<i>Escherichia fergusonii</i>	RG2	RG2	1	0	684	0	0	1	0	0	0	0
		<i>Proteus vulgaris</i>	RG2	RG1	1	0	0	0	0	2214	0	0	0	0
		<i>Proteus penneri</i> ATCC 35198	RG2	RG1	1	0	0	0	0	1977	0	0	0	0
		<i>Providencia alcalifaciens</i>	RG2	RG1	1	0	0	0	0	1	0	0	0	15
		<i>Providencia rettgeri</i>	RG2	RG1	1	613	0	0	0	1419	613	30	0	0
		<i>Pseudomonas aeruginosa</i>	RG2	RG2	1	45	0	0	73	5746	45	0	97	4841
		<i>Psychrobacter phenylpyruvicus</i> DSM 7	RG2	RG1	1	1942	1580	0	2080	6537	1942	2005	0	0
		<i>Leclercia adecarboxylata</i>	RG2	RG1	1	0	0	0	0	1	0	0	0	109
		<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar <i>Senftenberg</i>	RG2	RG2	1	0	0	0	0	1	0	0	0	34
		<i>Proteus mirabilis</i>	RG2	RG2	1	0	0	0	0	3199	0	0	0	0
		<i>Serratia liquefaciens</i>	RG1	RG2	1	0	0	0	0	1	0	0	590	2692
		<i>Serratia marcescens</i>	RG2	RG2	1	0	0	0	0	1	0	0	184	1979
		<i>Vibrio cholerae</i> CP1035(8)	RG2	RG1	1	0	0	0	0	323	0	0	192	216
		<i>Yersinia enterocolitica</i>	RG2	RG2	1	0	22	0	0	1	0	0	0	0
	<b>β-proteobacteria</b>	<i>Sutterella wadsworthensis</i>	RG2	RG1	8	0	0	8	0	5	0	0	10	1489
		<i>Oligella urethralis</i>	RG2	RG1	1	0	0	0	0	477	0	0	0	0
		<i>Comamonas aquatica</i>	RG2	RG2	1	1249	0	0	0	1	1249	0	0	838
	<b>δproteobacteria</b>	<i>Alcaligenes faecalis</i> subsp. <i>faecalis</i> NB	RG2	RG2	1	16326	0	0	1280	11426	16326	5934	0	2330
		<i>Bilophila wadsworthia</i> 3_1_6	RG2	RG2	1	0	0	0	0	1	0	1022	13142	0
	<b>εproteobacteria</b>	<i>Arcobacter butzleri</i>	RG2	RG2	128	23	307	198	406	56	23	56	545	1747
		<i>Helicobacter bilis</i>	RG1	RG2	1	0	0	0	0	1	0	0	0	180
		<i>Campylobacter coli</i> BIGS0005	RG2	RG2	78	0	114	0	42	1	0	0	0	39
		<i>Helicobacter rodentium</i> ATCC 700285	RG1	RG2	3325	0	1293	713	0	1	0	0	0	0
Bacteroidetes	<b>Bacteroidia</b>	<i>Parabacteroides distasonis</i> str. 3999B	RG2	RG1	1357	1229	2393	0	1600	0	1229	200	276	459
		<i>Porphyromonas asaccharolytica</i> DSM 17284	RG2	RG2	653	0	595	613	1263	0	0	670	0	0
		<i>Porphyromonas gulae</i>	RG1	RG2	0	0	0	4566	9333	0	0	1133	0	1669
		<i>Prevotella albensis</i> DSM 11370 = JCM 12120	RG2	RG1	0	2109	0	0	0	0	2109	0	0	0
		<i>Prevotella bivia</i>	RG2	RG2	458	918	723	0	694	0	918	0	0	0
		<i>Prevotella melaninogenica</i> DNF00666	RG2	RG2	1872	1860	2659	0	5243	0	1860	2187	0	0
		<i>Bacteroides caccae</i> ATCC 43185	RG2	RG2	0	0	0	0	0	0	0	0	1128	885
		<i>Bacteroides pyogenes</i> DSM 20611 = JCM 12120	RG1	RG2	106	2156	333	127	268	107	2156	1594	316	152
		<i>Prevotella brevis</i> ATCC 19188	RG2	RG1	810	1957	1126	0	556	0	1957	470	298	1109
		<i>Prevotella bergensis</i> DSM 17361	RG2	RG2	0	0	0	0	0	0	0	4498	0	0
		<i>Prevotella multisaccharivorax</i> DSM 17284	RG2	RG2	0	0	0	0	5568	0	0	0	0	0
		<i>Odoribacter splanchnicus</i> DSM 20712	RG2	RG1	0	0	0	0	0	0	0	5321	6342	0
		<i>Sanguibacteroides justesenii</i>	RG2	RG2	0	0	0	0	0	0	0	1717	533	0
		<i>Bacteroides fragilis</i> HMW 615	RG2	RG2	1672	1431	1639	865	1011	499	1431	665	8225	737
		<i>Prevotella bryantii</i>	RG2	RG1	623	568	870	220	776	0	568	314	0	173
		<i>Prevotella salivae</i> F0493	RG2	RG1	0	2328	0	0	0	0	2328	0	0	0
		<i>Bacteroides nordii</i> WAL 11050 = JCM 12120	RG2	RG2	702	1350	871	0	0	0	1350	0	0	0

		Bacteroides ovatus SD CMC 3f	RG2	RG2	0	0	0	0	4758	0	0	1361	645	2398
		Bacteroides uniformis ATCC 8492	RG2	RG1	1006	843	418	279	901	115	843	163	136	254
		Bacteroides eggerthii	RG2	RG1	0	0	0	0	0	0	0	0	0	1552
	Flavobacteriia	Myroides odoratimimus CCUG 12901	RG2	RG1	0	0	0	0	0	1077	0	251	29	0
		Myroides odoratus	RG2	RG1	0	0	0	0	0	0	0	0	0	1079
		Empedobacter falsenii	RG2	RG1	0	0	0	0	1287	0	0	0	0	5030
		Empedobacter brevis NBRC 14943 = A	RG2	RG2	0	1991	0	0	0	0	1991	0	0	0
Firmicutes	Negativicutes	Megasphaera elsdenii	RG2	RG1	19522	23007	36687	24104	0	3431	23007	15957	5449	0
		Bacteroides nordii	RG2	RG1	3218	0	0	0	0	0	0	0	0	0
		Acidaminococcus fermentans DSM 20	RG2	RG1	119072	20696	60000	55789	35881	4666	20696	33222	76082	5756
		Mitsuokella jalaludinii DSM 13811	RG2	RG2	36676	0	0	0	0	0	0	0	0	0
		Mitsuokella multacida DSM 20544	RG2	RG2	6268	9081	9381	4513	10267	6027	9081	6791	10395	5255
		Acidaminococcus intestini RyC-MR95	RG2	RG1	0	0	0	0	0	0	0	0	0	6617
	Bacilli	Aerococcus viridans LL1	RG2	RG2	11347	18548	20569	35642	11567	4806	18548	1633	3485	533
		Bacillus cereus	RG2	RG2	0	0	0	0	0	4	0	0	0	0
		Enterococcus faecium	RG2	RG1	1295	570	218	188	311	86	570	183	2464	15
		Enterococcus faecalis EnGen0413	RG2	RG2	1859	171	707	503	663	546	171	278	119	204
		Enterococcus hirae ATCC 9790	RG2	RG2	0	573	0	120	176	0	573	0	412	0
		Jeotgalicoccus sauidmassiliensis	RG2	RG2	0	0	0	0	0	0	0	0	0	0
		Lactobacillus crispatus EM-LC1	RG2	RG2	68	0	0	0	0	0	0	0	0	0
		Lactococcus garvieae	RG1	RG2	0	176	0	0	209	353	176	198	41	0
		Listeria monocytogenes FSL F2-515	RG2	RG2	0	0	335	0	191	0	0	0	0	0
		Staphylococcus aureus	RG2	RG2	0	0	0	0	27	0	0	14	0	0
		Staphylococcus simulans	RG2	RG2	0	2086	0	0	0	0	2086	0	0	0
		Streptococcus gallolyticus subsp. gallo	RG2	RG2	107	4596	3235	104	237	1371	4596	3609	1269	58
		Streptococcus equinus JB1	RG2	RG2	25	2652	5717	3855	3533	3250	2652	8131	3388	7
		Streptococcus equi subsp. zooepidemi	RG2	RG2	0	1208	0	0	0	0	1208	39	0	0
		Streptococcus agalactiae	RG2	RG2	0	29	25	10	37	0	29	22	0	0
		Streptococcus infantarius subsp. infan	RG1	RG2	922	2562	2937	2225	762	919	2562	2362	19596	721
		Streptococcus lutetiensis 033	RG2	RG2	6811	25889	24944	18089	13213	10844	25889	7639	7682	3517
		Streptococcus parauberis	RG1	RG2	516	790	213	173	227	0	790	0	0	0
		Streptococcus salivarius SK126	RG2	RG1	0	0	0	0	544	0	0	0	0	0
		Streptococcus pasteurianus ATCC 431	RG2	RG2	0	648	695	672	606	335	648	509	350	0
	Streptococcus suis GZ1	RG2	RG2	2026	1558	1711	1107	1360	734	1558	3867	744	3344	
	Tissierellia	Anaerococcus prevotii	RG1	RG2	9	49	1576	1009	52	0	49	1514	94	0
		Finegoldia magna	RG2	RG2	43	339	312	94	197	246	339	47	0	0
	Erysipelotrichia	Erysipelothrix rhusiopathiae	RG2	RG2	0	236	0	0	97	0	236	1071	0	0
		Erysipelothrix tonsillarum DSM 14972	RG2	RG1	8249	9335	9528	8555	5809	3459	9335	10383	3267	0
	Clostridia	Faecalibacterium cf. prausnitzii KLE12	RG2	RG2	0	0	0	0	23087	0	0	0	0	11351
		Flavonifractor plautii ATCC 29863	RG2	RG2	0	0	25	0	32	0	0	30	21	0
		Intestinibacter bartlettii DSM 16795	RG2	RG1	1400	0	0	0	3909	0	0	0	0	0
		Clostridium baratii str. Sullivan	RG2	RG2	0	17248	0	0	0	1555	17248	3879	3260	1961
		Clostridium botulinum	RG2	RG2	0	600	0	0	25	1778	600	119	1267	47
		Clostridium butyricum	RG2	RG2	210	2687	3295	1559	1107	1395	2687	1478	7254	105
		Clostridioides difficile 6534	RG2	RG2	532	101	0	17	19	35	101	12	2245	0
		Paenibacillus sordellii	RG2	RG2	0	2163	687	1951	0	0	2163	501	1507	0
		Paraclostridium bifermentans	RG2	RG2	0	92	0	0	0	0	92	0	0	0
		Terrisporobacter glycolicus ATCC 1488	RG2	RG2	0	23864	5179	5563	6624	6399	23864	3902	13999	0
			Terrisporobacter othiniensis	RG2	RG2	0	0	5151	12020	0	0	0	333	0

		Clostridium paraputrificum AGR2156	RG2	RG1	0	3195	0	0	0	0	3195	0	0	0
		Clostridium perfringens C str. JGS1495	RG2	RG2	95	9106	1075	1321	2587	1135	9106	1417	3609	870
		Clostridium novyi A str. 4552	RG2	RG2	1847	5401	3591	3369	0	0	5401	2214	3431	0
		Clostridium tetani	RG2	RG2	261	430	596	468	31	448	430	34	26	336
		[Clostridium] clostridioforme	RG2	RG1	0	0	0	0	664	0	0	0	0	88
Actinobacteria	Actinobacteria	Trueperella pyogenes TP8	RG2	RG2	0	0	0	0	434	0	0	0	0	0
		Corynebacterium pilosum DSM 20521	RG2	RG2	0	6515	0	1285	0	5163	6515	0	0	0
		Corynebacterium freneyi DNF00450	RG2	RG2	0	34751	1773	2609	28124	29262	34751	14837	43128	31525
		Corynebacterium urealyticum	RG2	RG2	0	2318	0	0	1283	2690	2318	1075	0	351
		Dietzia cinnamea P4	RG2	RG1	0	1431	0	0	0	0	1431	0	0	0
		Mycobacterium avium subsp. avium E	RG2	RG2	0	0	0	0	0	1965	0	0	0	0
		Corynebacterium jeikeium	RG2	RG1	0	0	0	0	0	0	0	0	0	56
	Coriobacteriia	Atopobium vaginae	RG2	RG1	0	21	0	0	0	0	21	0	0	0
		Collinsella aerofaciens ATCC 25986	RG2	RG1	0	8952	0	0	11750	0	8952	3808	0	5412
		Eggerthella lenta	RG2	RG2	0	472	0	155	209	0	472	0	0	0
Cyanobacteria	Oscillatoriothycideae	Planktothrix agardhii NIVA-CYA 126/8	RG2	RG1	0	646	0	0	0	0	646	0	0	0
Chlamydiae	Chlamydiia	Chlamydia suis MD56	RG2	RG2	3052	2195	3768	1097	1806	670	2195	5516	660	4119
Synergistetes	Synergistia	Pyramidobacter piscolens W5455	RG2	RG1	0	0	0	0	0	0	0	36623	9003	1136
Tenericutes	Mollicutes	Acholeplasma laidlawii PG-8A	RG1	RG2	4431	0	3425	3484	2054	2184	0	1843	4042	2169
		Acholeplasma hippikon ATCC 29725	RG1	RG2	3046	0	0	0	0	0	0	0	0	0
		Acholeplasma equifetale ATCC 29724	RG1	RG2	4723	0	2180	0	0	2391	0	0	0	0
		Acholeplasma modicum ATCC 29102	RG1	RG2	0	0	0	0	13236	0	0	0	0	3508
		Acholeplasma axanthum ATCC 25176	RG1	RG2	21874	1684	8077	9605	7369	10167	1684	8158	13333	2388
Spirochaetes	Spirochaetia	Brachyspira murdochii DSM 12563	RG2	RG1	0	0	0	0	0	0	0	0	0	679
Fusobacteria	Fusobacteriia	Fusobacterium necrophorum	RG2	RG2	0	0	0	0	0	0	0	0	0	0
		Fusobacterium ulcerans	RG2	RG2	0	752	586	0	486	0	752	1164	0	1019
Total					272292	288571	234228	208990	228857	145052	288571	213871	274659	128671