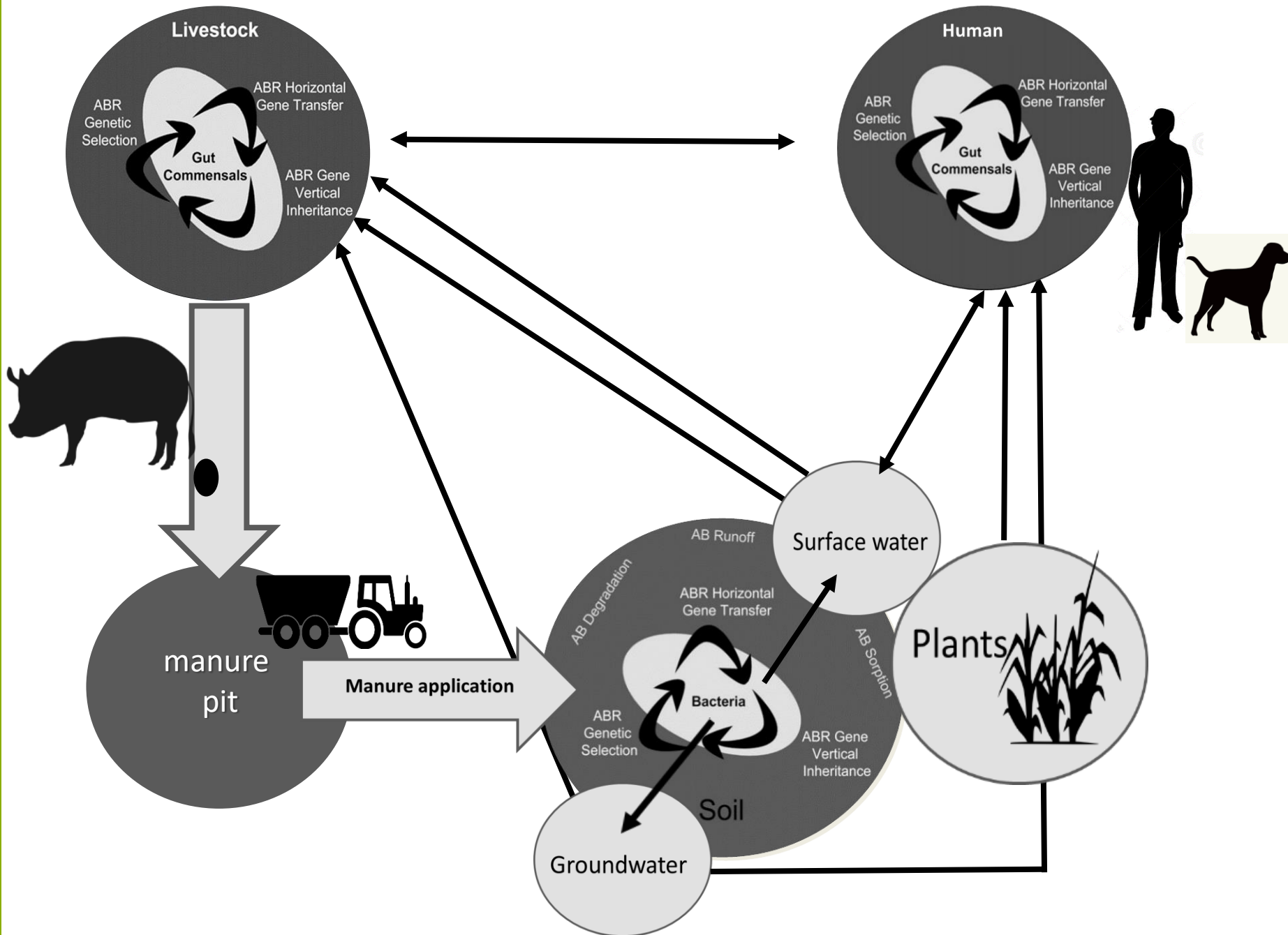


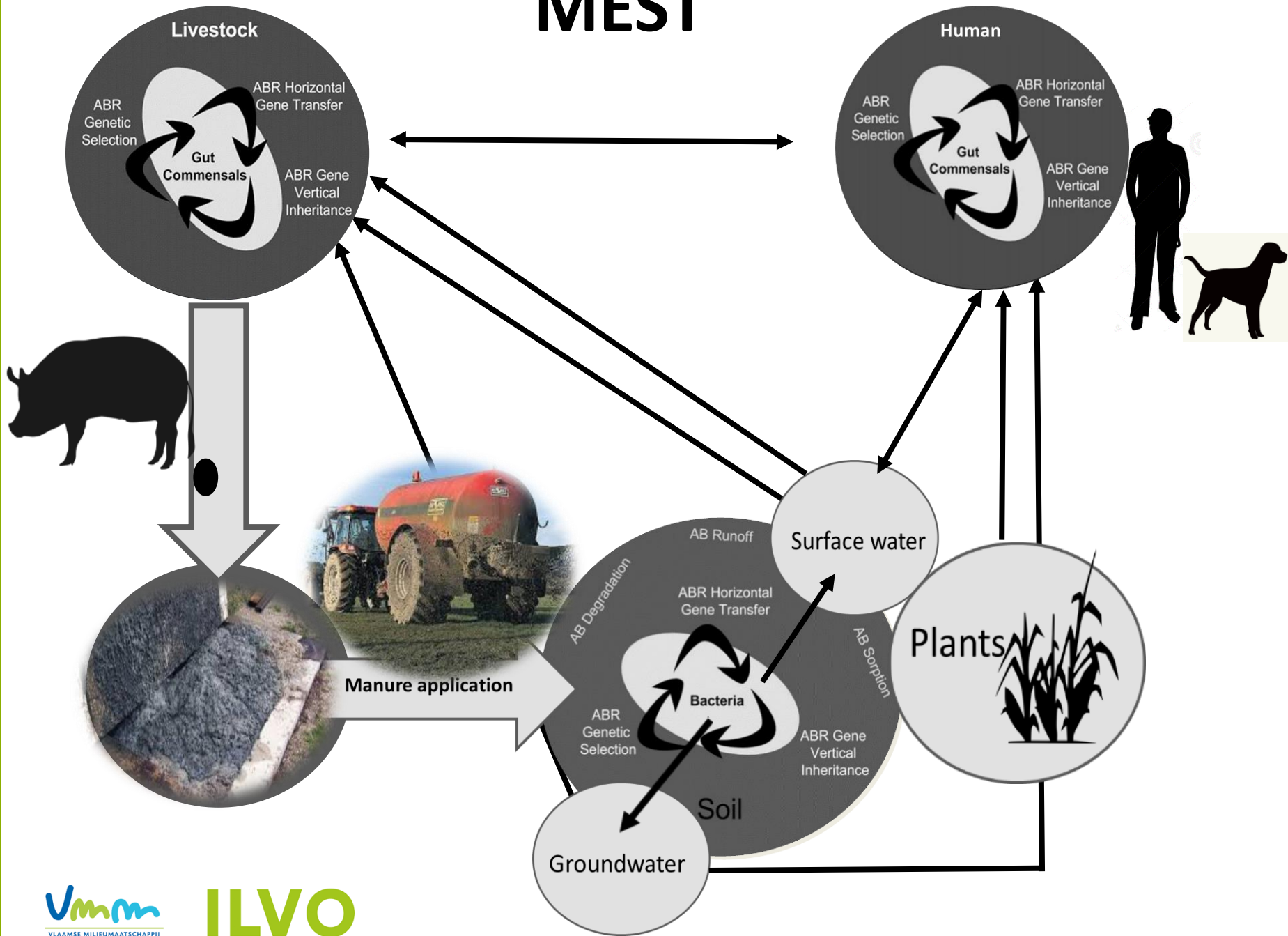
One Health in de praktijk : Antibioticaresiduen en - resistentiegenen in de landbouwomgeving

Geertrui Rasschaert
19/06/2019

ILVO



MEST



Bemonstering mest

- 91 varkensstalen en 9 kalfsmeststalen in Vlaanderen
- 24 stalen rundermest in Wallonië
- Verzameld door Mestbank na homogenisatie, juist voor of na transport en door Centre de Michamps



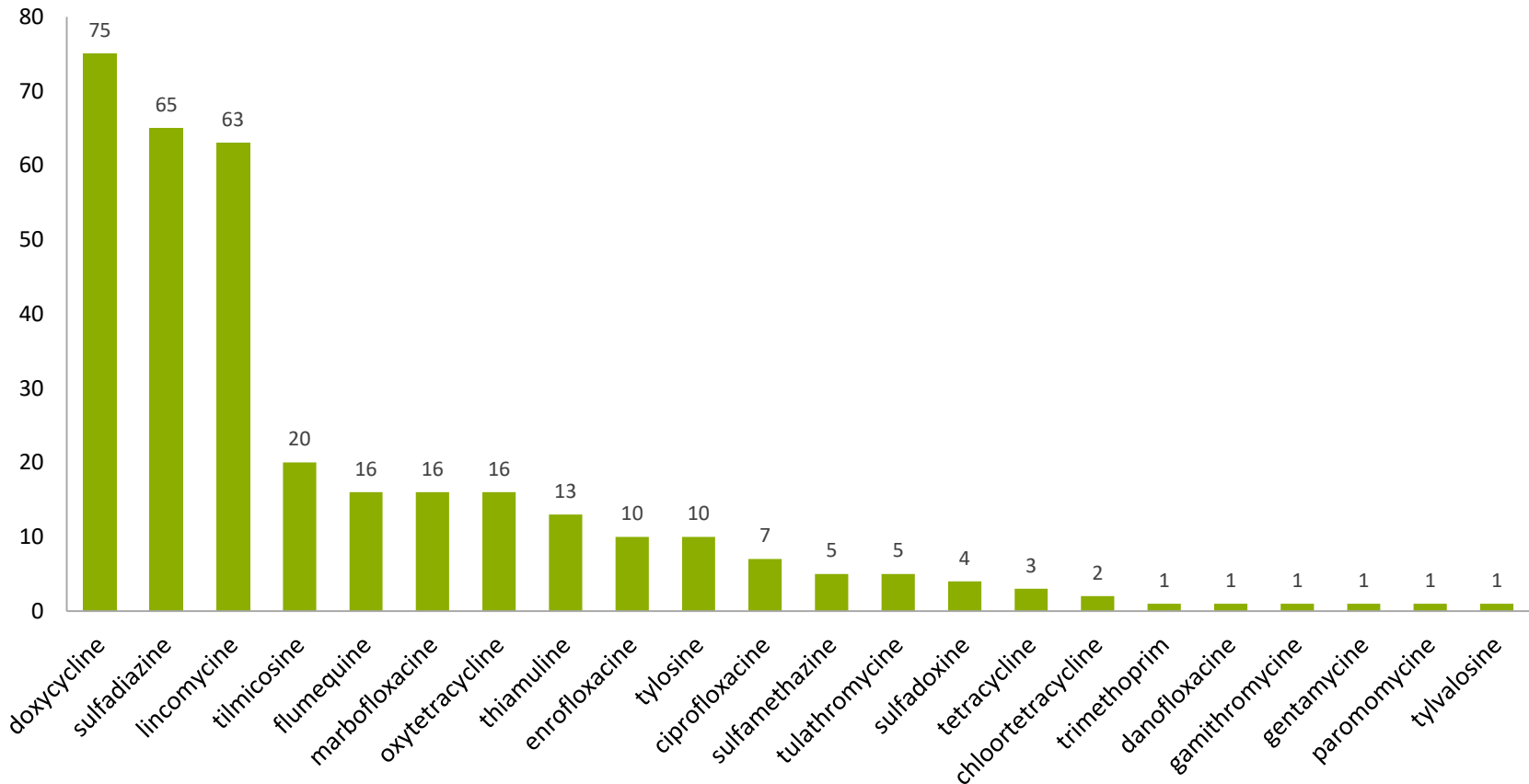
1. kwantificatie van antibioticaresiduen
2. bepaling antibiotica resistentie in bacteriën (*E. coli* en *Salmonella*)

Quantificatie van antibioticaresiduen in mest (LC-MS/MS)

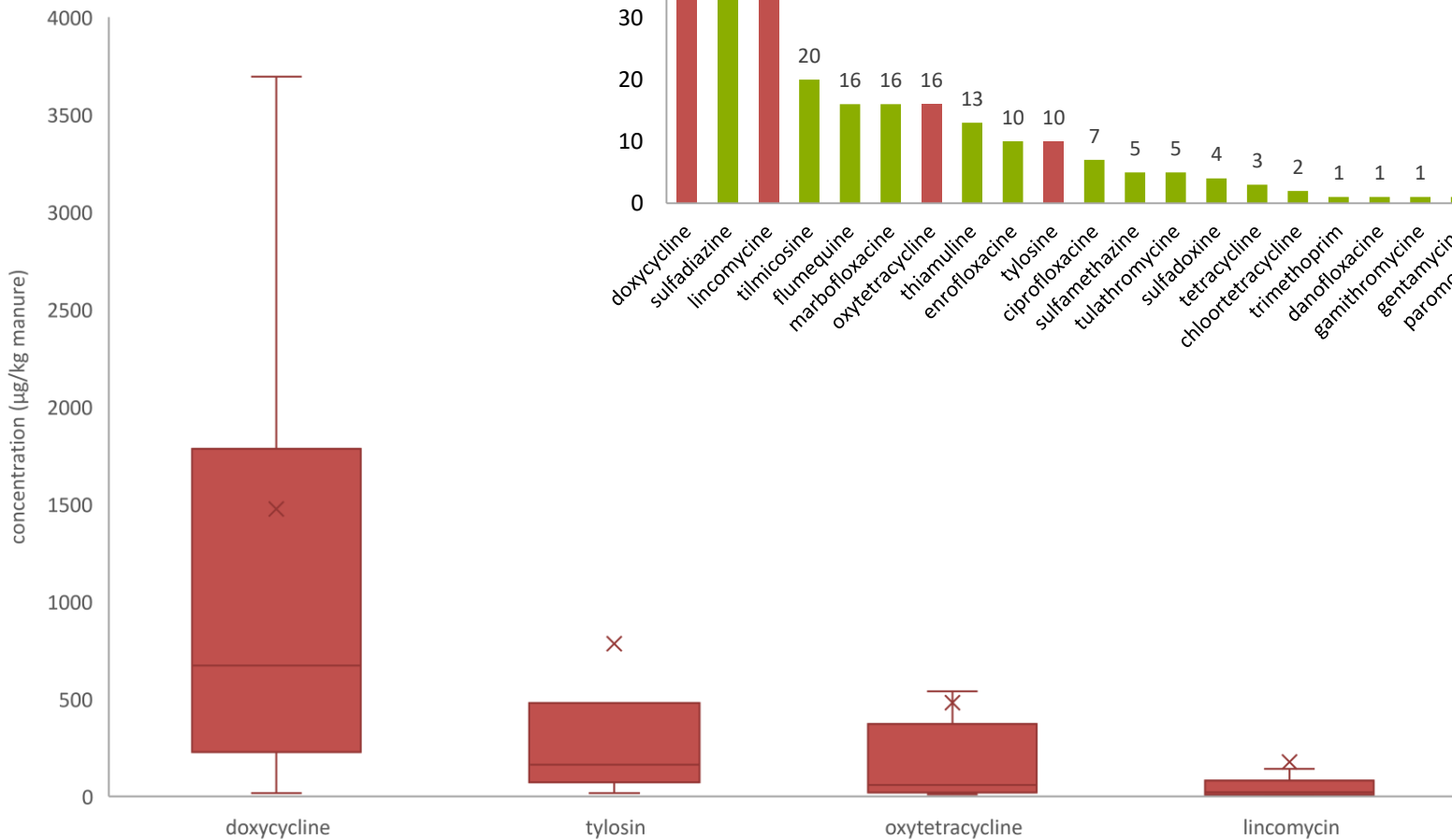
<i>β-lactamantibiotics</i>	<i>Tetracyclines</i>	<i>Macrolides</i>	<i>Quinolones</i>	<i>Sulfamides and trimethoprim</i>	<i>Aminoglycosides</i>
amoxicillin	chlortetracycline	erythromycin	cinoxacin	sulfachloropyridazine	apramycin
ampicillin	doxycycline	gamithromycin	nalidixic acid	sulfaclozine	dihydrostreptomycin
benzylpenicillin	oxytetracycline	spiramycin	oxacilin acid	sulfadiazine	gentamicin
cloxacillin	tetracycline	tilmicosin		sulfadimethoxine	kanamycin
dicloxacillin		tulathromycin		sulfadoxine	neomycin
nafcillin		tylosin	<i>Fluoroquinolones</i>	sulfamerazine	paromomycin
oxacillin		tylvasolin	ciprofloxacin	sulfamethazine	spectinomycin
penicillin V	<i>Pleuromutilins</i>	<i>Lincosamides</i>	danofloxacin	sulfamethoxazole	streptomycin
cefalexin	tiamulin	lincomycin	difloxacin	sulfamethoxyypyridazine	tobramycin
cefalonium	valnemulin	pirlymicin	enoxacin		
cefapirin (+metabolite desacetylcefaprine)			enrofloxacin	sulfapyridine	
cefazolin		<i>Amphenicols</i>	norfloxacin	sulfaquinoxaline	
cefoperazone	<i>Diaminopyrimidine derivatives</i>	chloramphenicol	flumequine	sulfathiazole	
cefquinome	dapsone	florfenicol	marbofloxacin	trimethoprim	
ceftiofur (+metabolite desfuroylceftiofur cysteïne disulfide)		thiamphenicol	sarafloxacin		



- 4 meststalen: geen AB
- Andere: tussen 1 en 12 verschillende AB



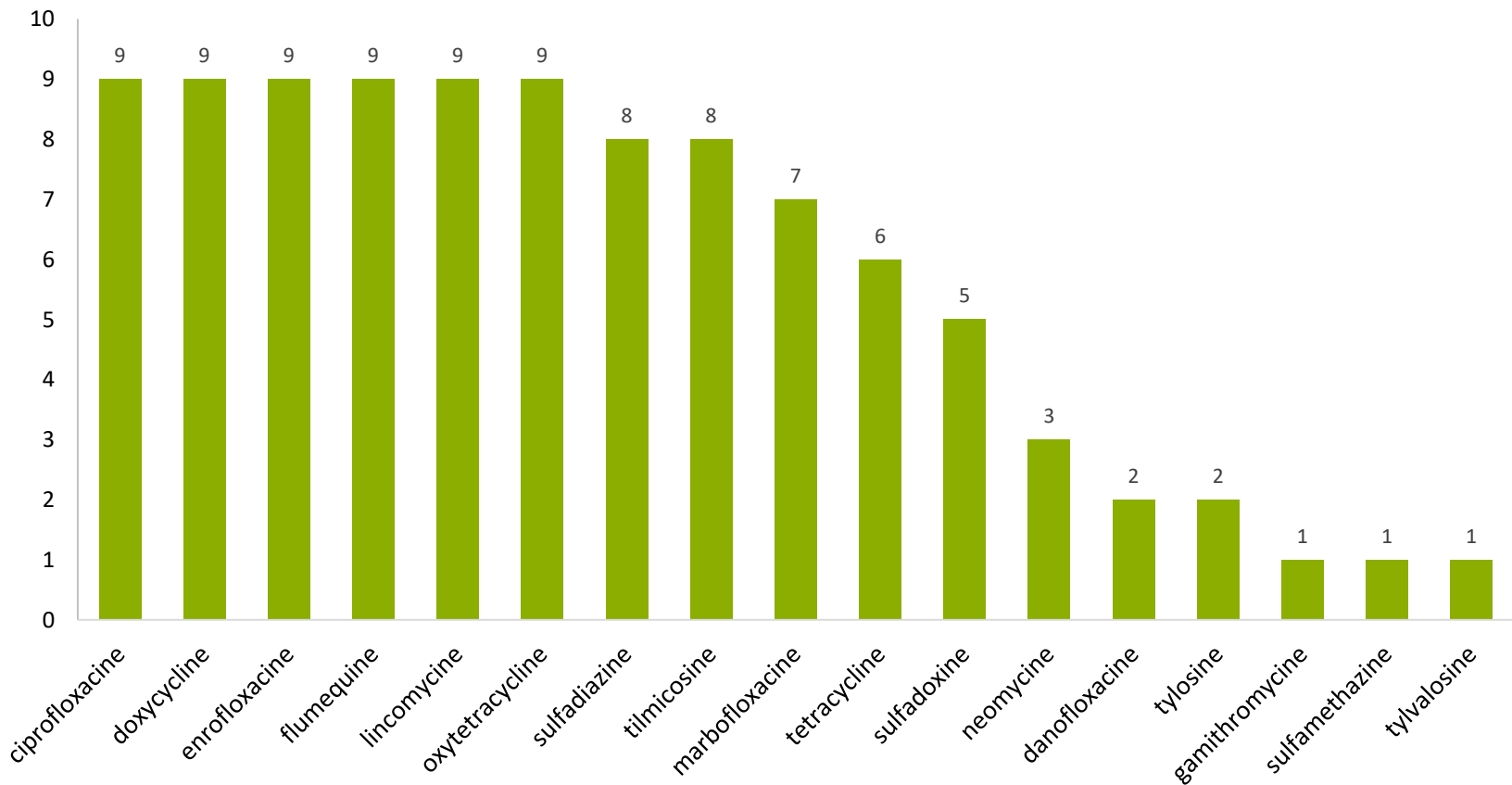
Antibiotica gedetecteerd in 91 varkensmeststalen



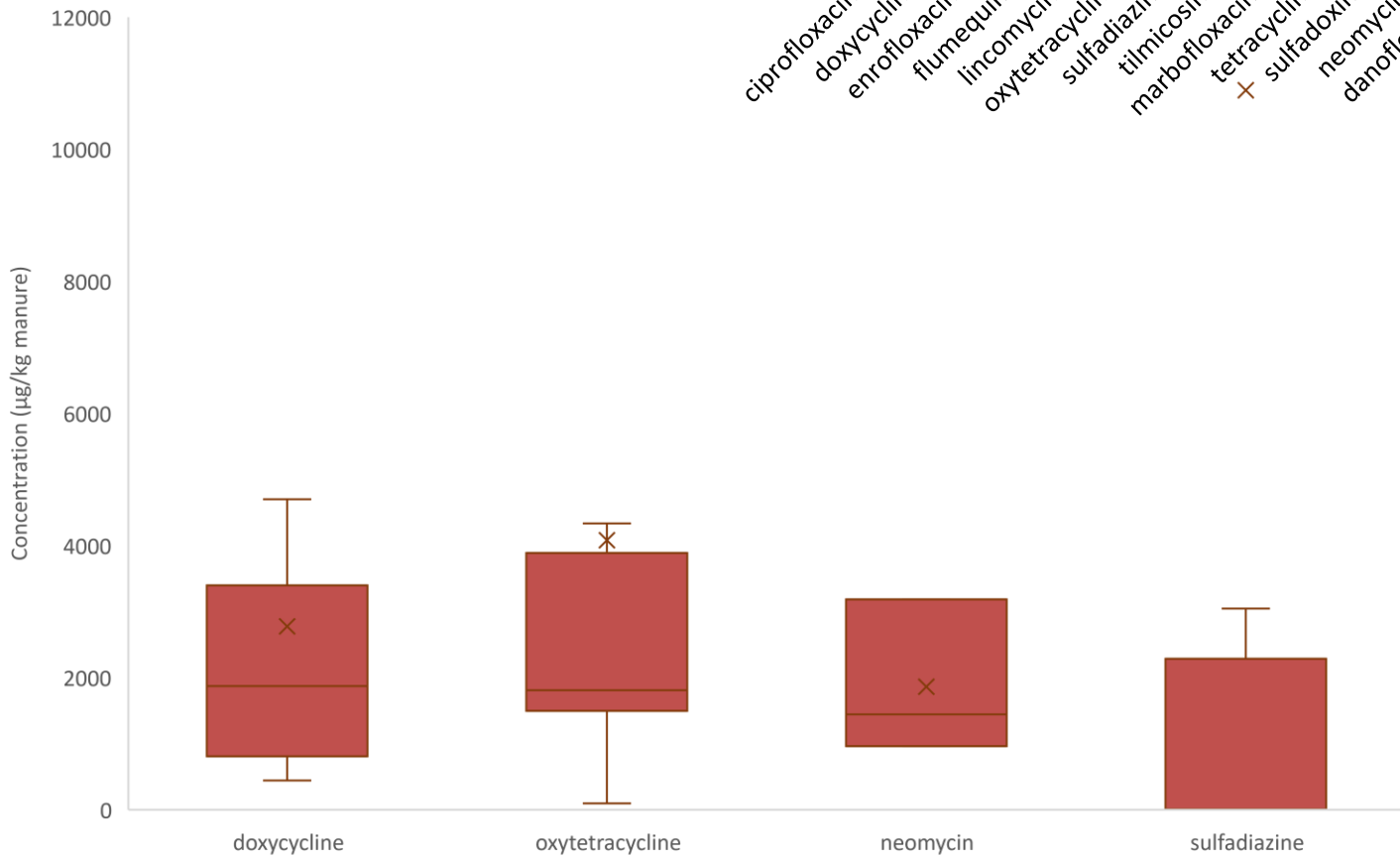
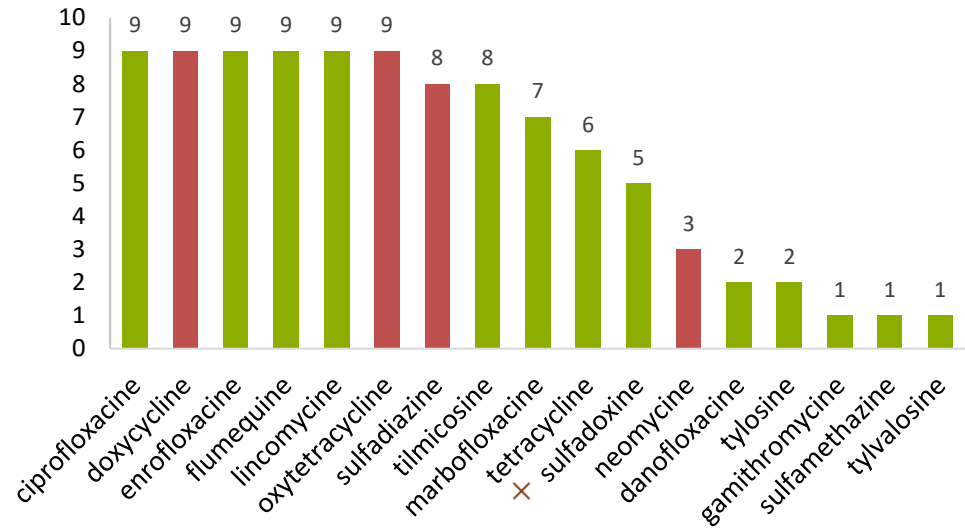
Box-whiskers plots van de antibiotica die in de hoogste concentraties werden gevonden (> 100 µg/kg) liquid manure. Outliers niet getoond.



- Alle kalvermeststalen tussen 8 en 15 AB



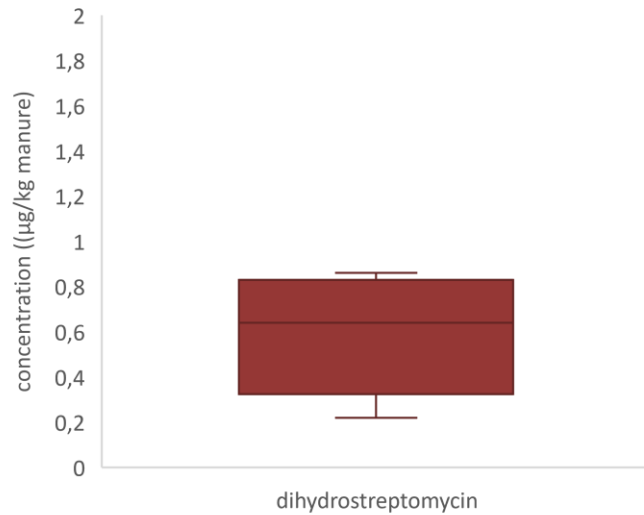
Antibiotica gedetecteerd in 9 kalvermeststalen



Box-whiskers plots van de antibiotica die in de hoogste concentraties werden gevonden (> 1000 µg/kg) liquid manure. Outliers niet getoond.

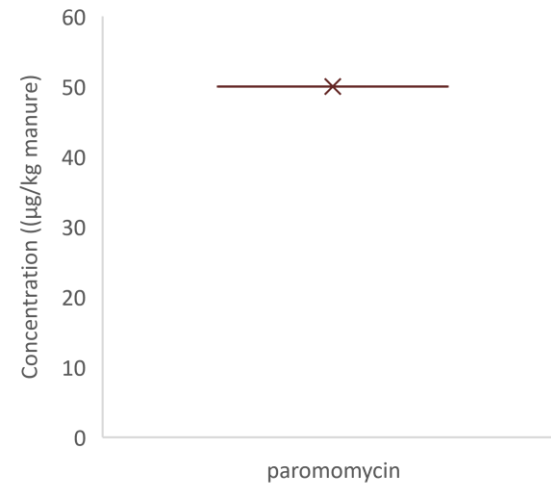


7 stalen dihydrostreptomycine



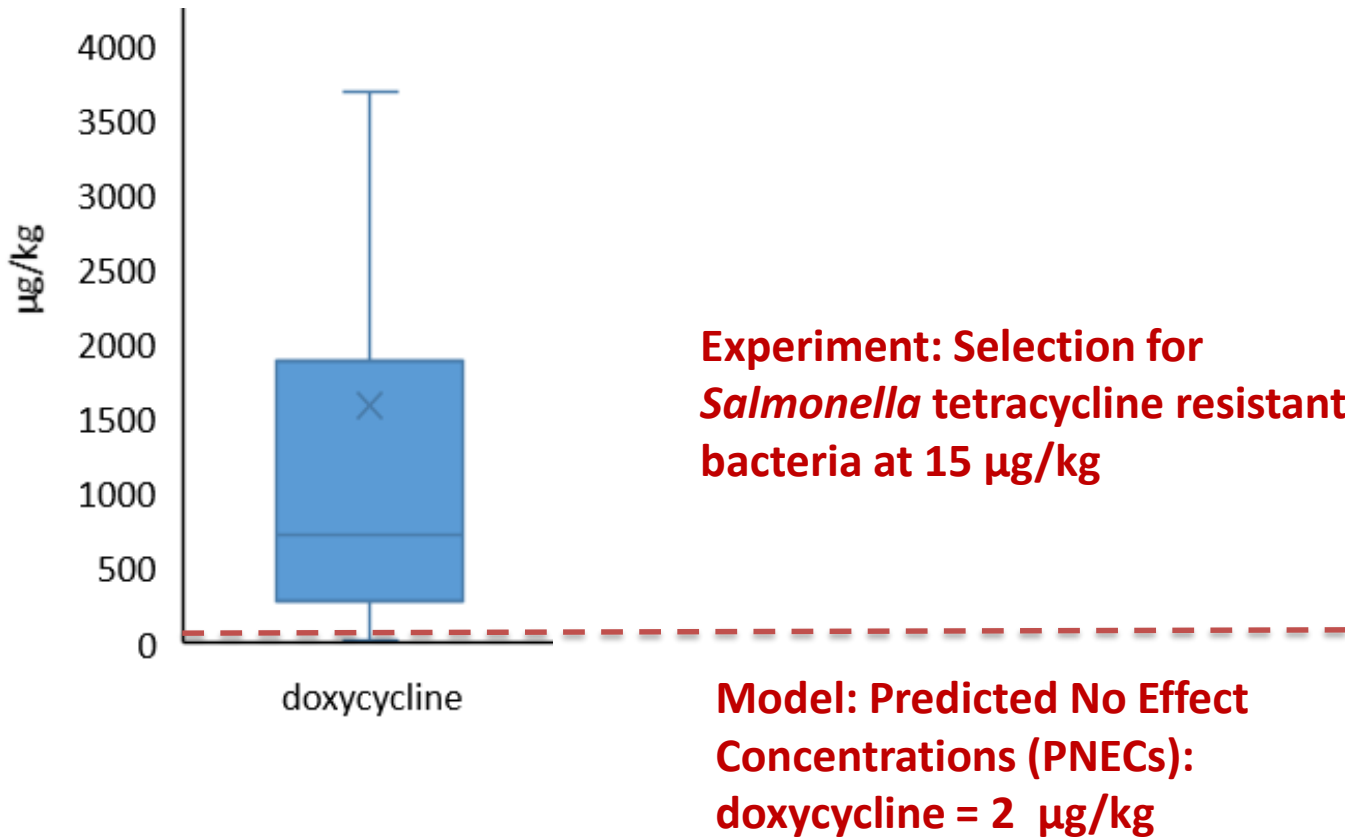
Box-whiskers plots of dihydrostreptomycine

1 staal paromomycine



Box-whiskers plots of paromomycine

Wat betekent dit voor antibioticaselectie ???

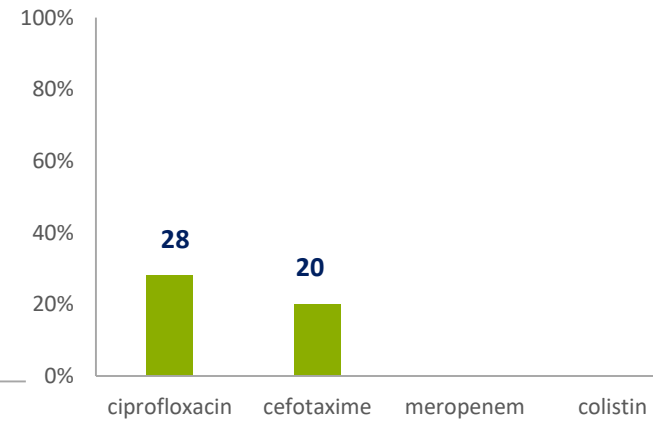
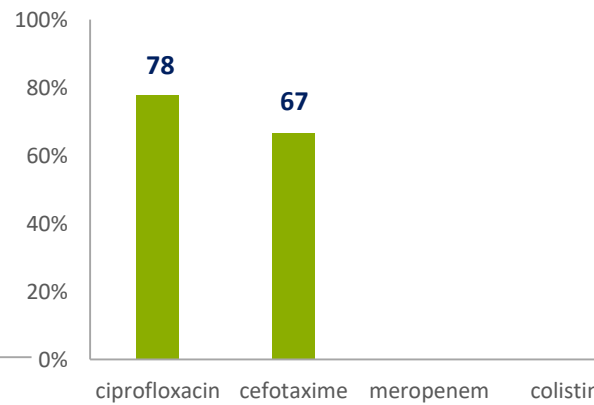
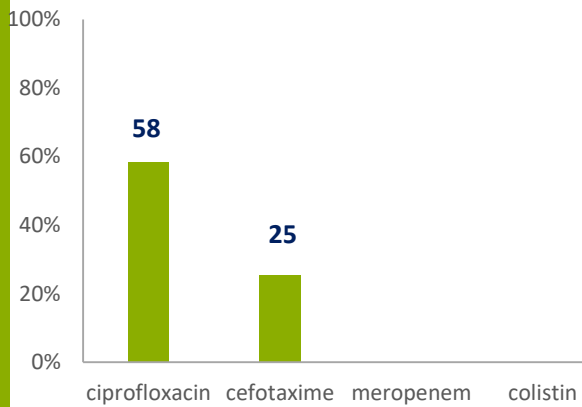


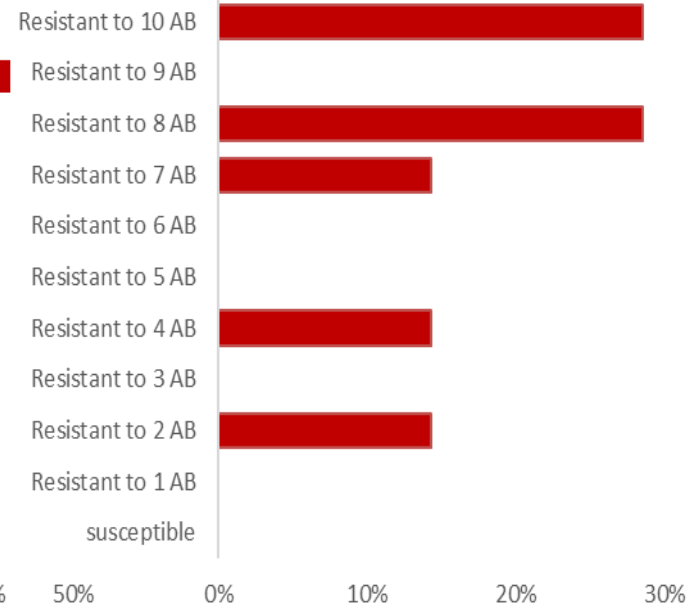
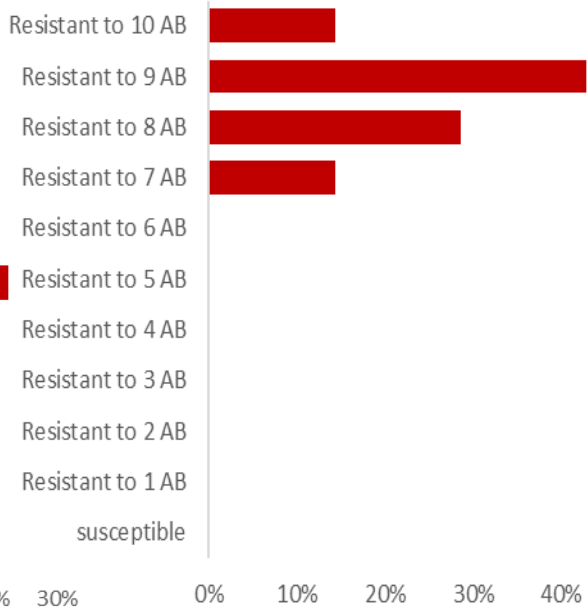
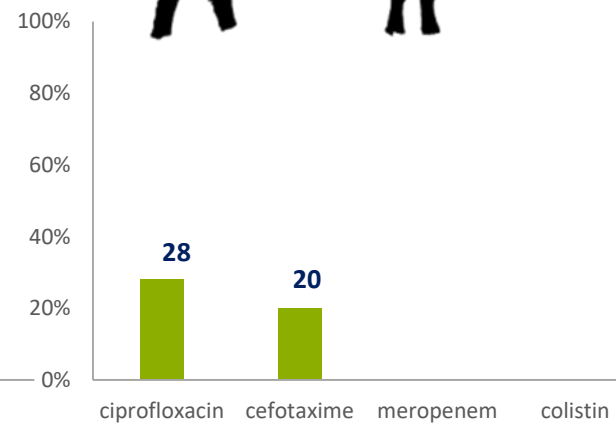
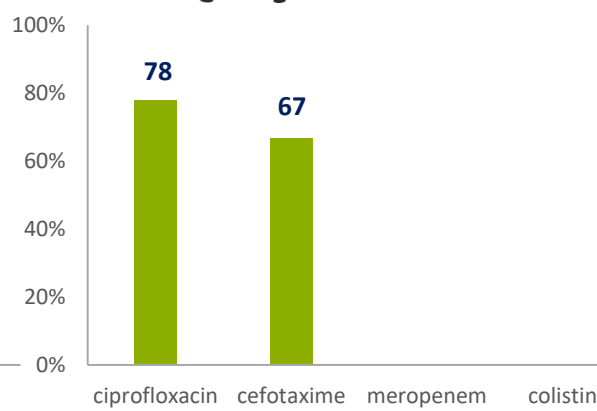
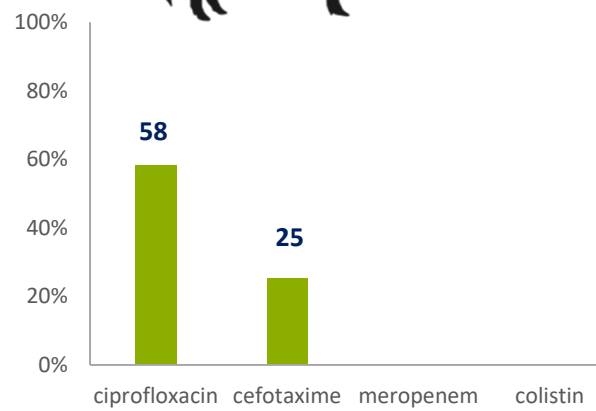
Gullberg et al., 2011 - Bengtsson-Palme et al. , 2016



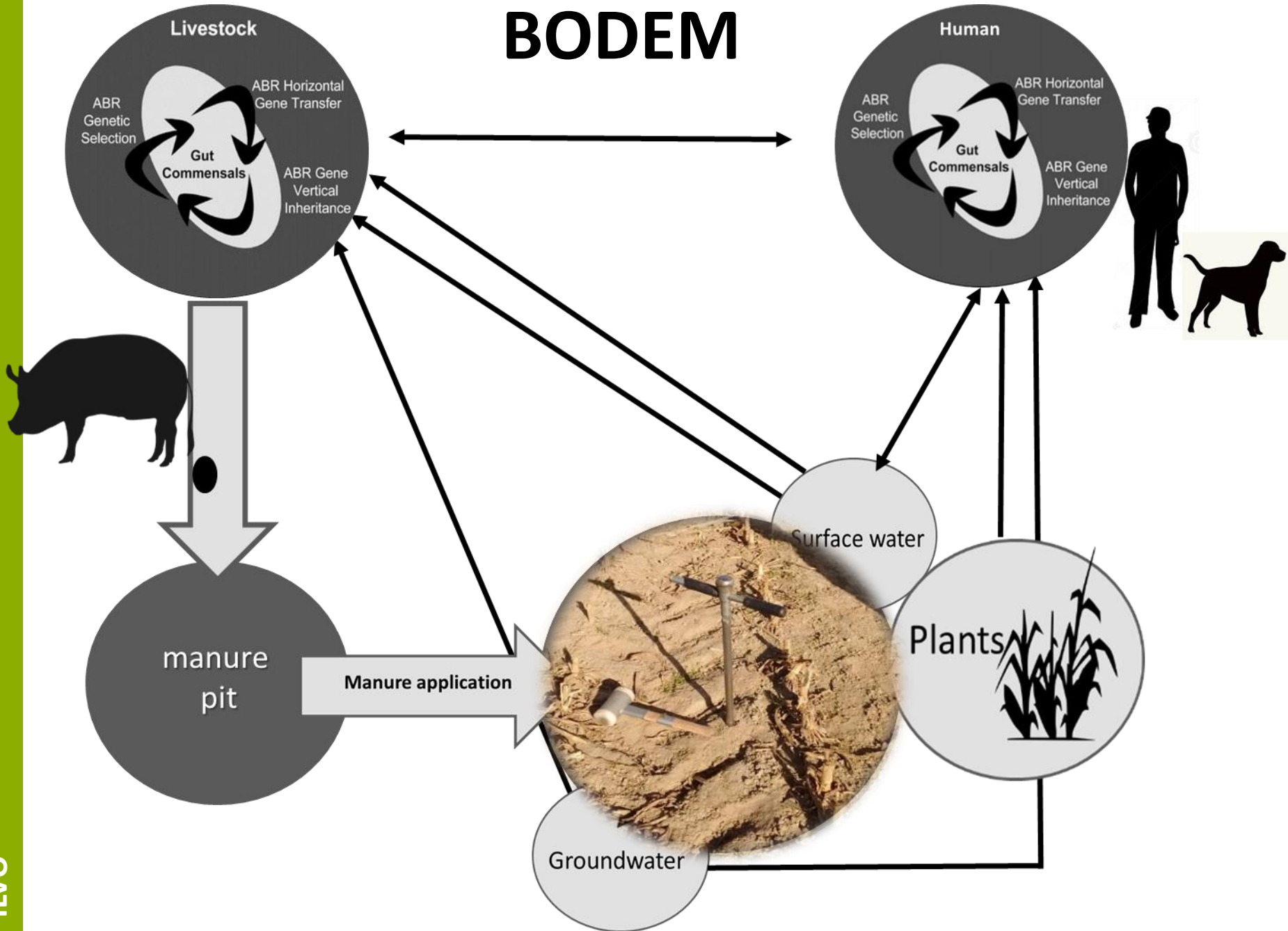
E. coli resistent voor humane kritische AB

- cefotaxime
- meropenem
- colistin
- ciprofloxacine



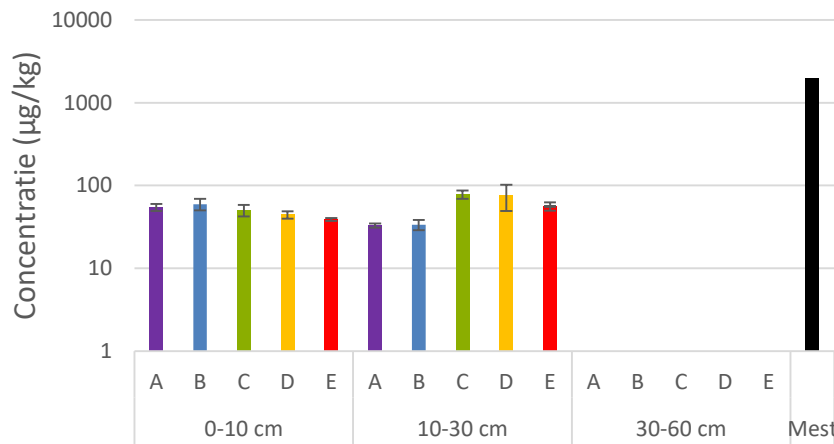


BODEM

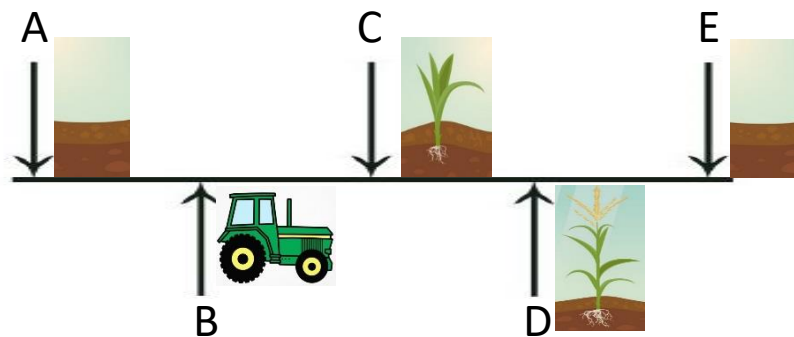
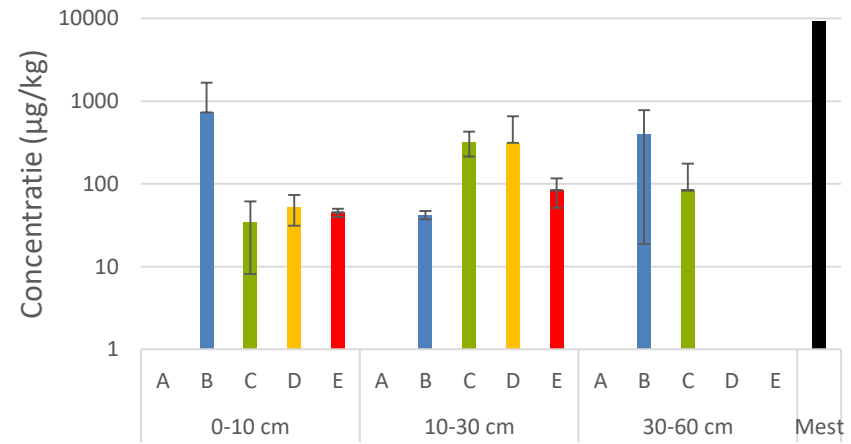


Doxycycline in bodem

Landbouwgrond 2
Klei



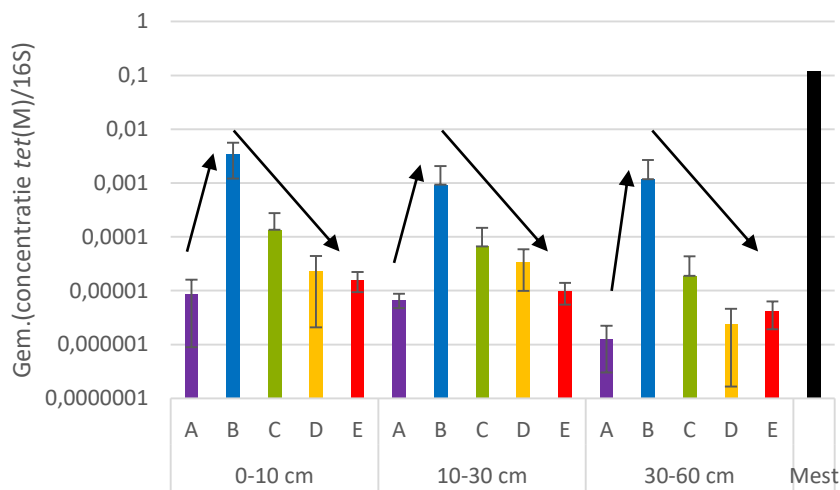
Landbouwgrond 5
Zandleem



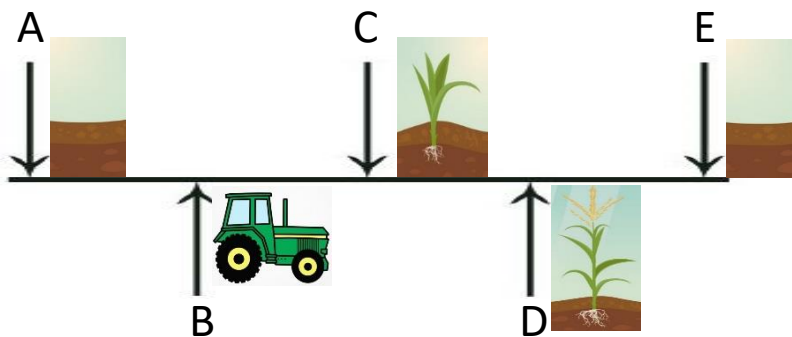
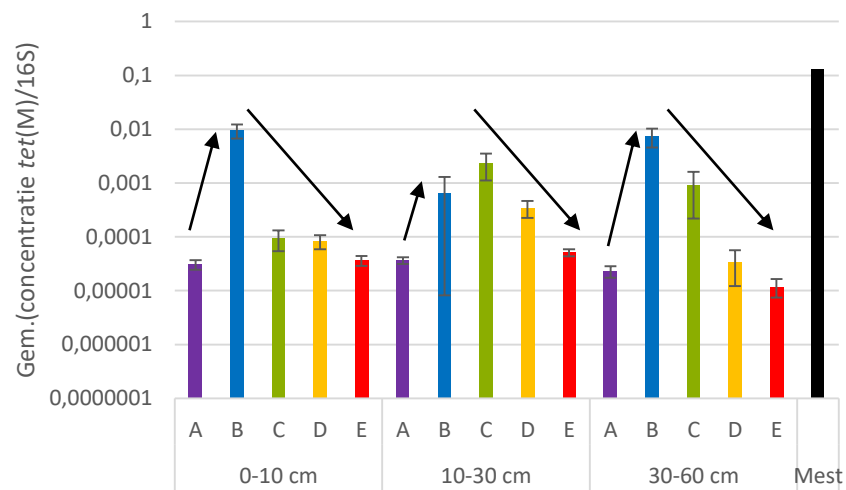
Resistentiegenen in bodem

Tet(M)

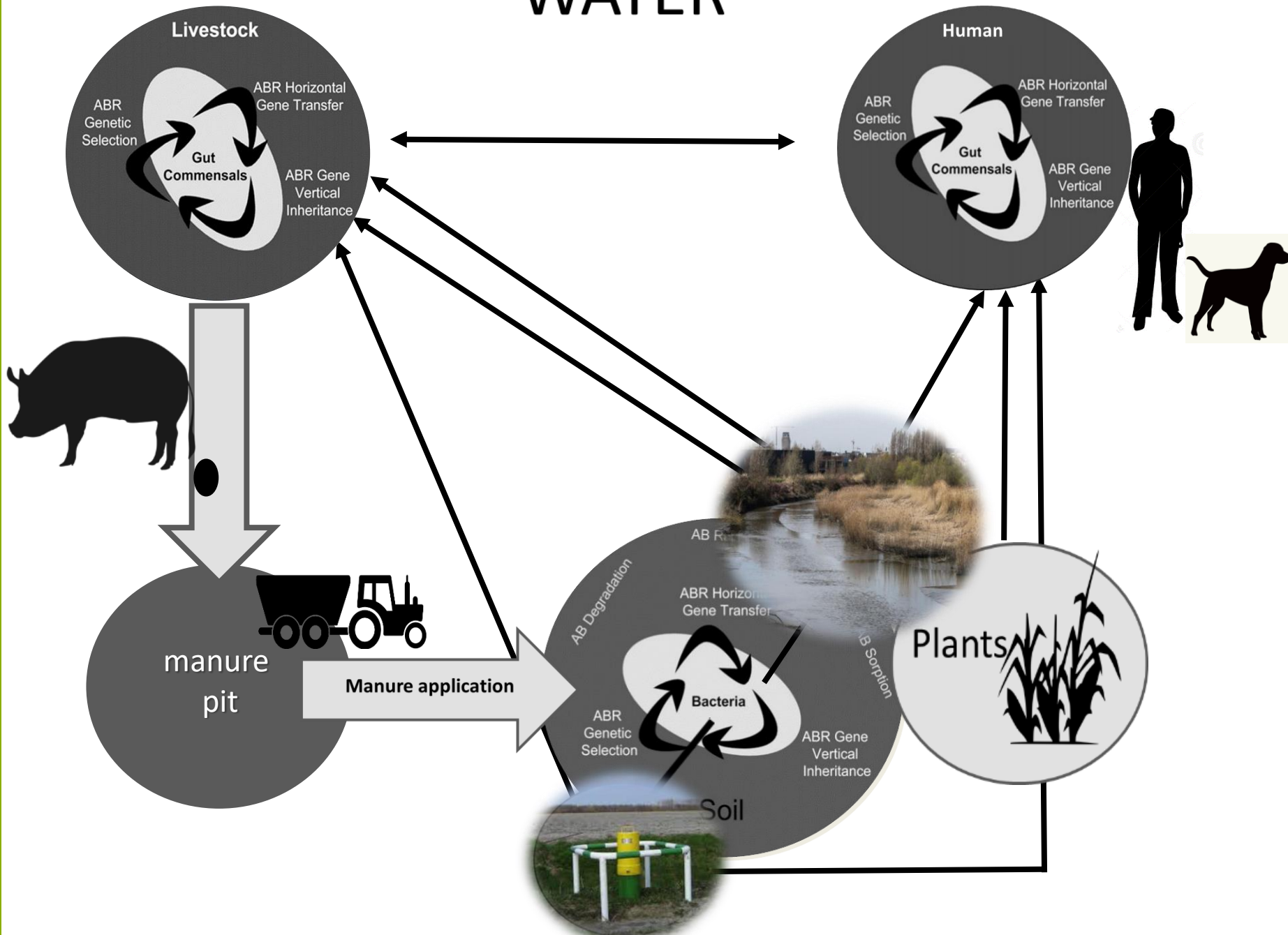
Landbouwgrond 1



Landbouwgrond 5



WATER



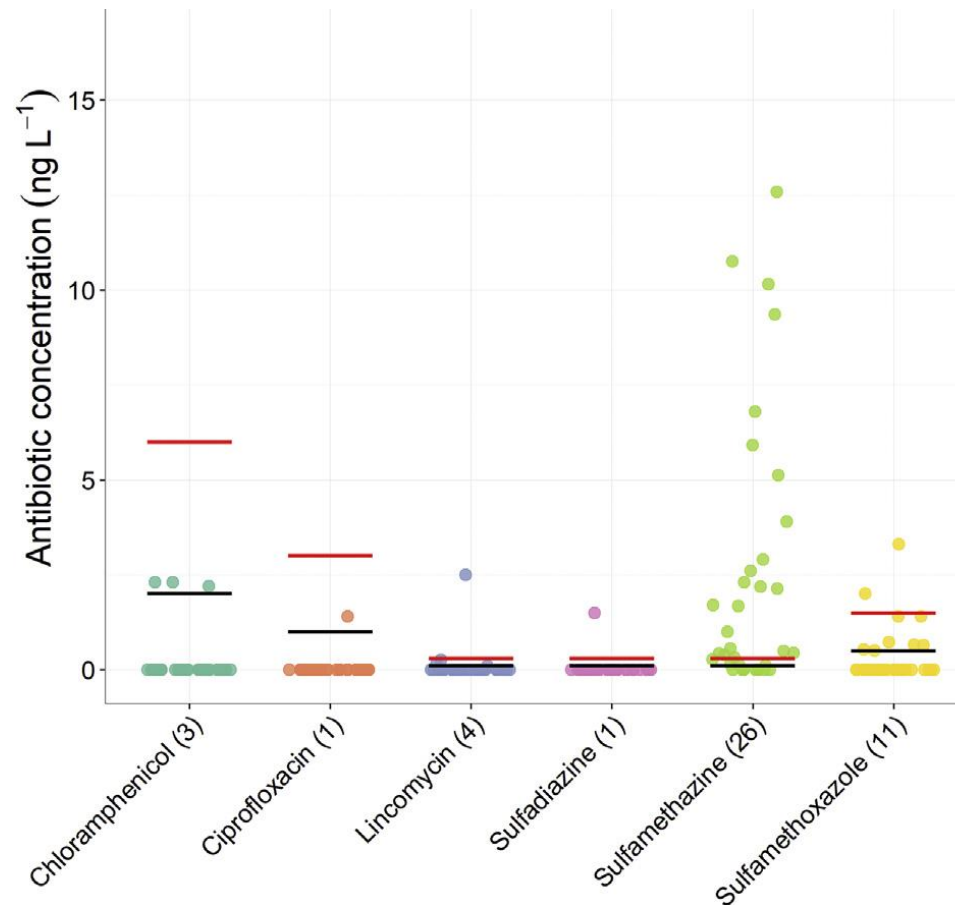
Lopend onderzoek van ILVO in opdracht van de VMM

- 80 stalen van grondwater
- 80 stalen van oppervlaktewater

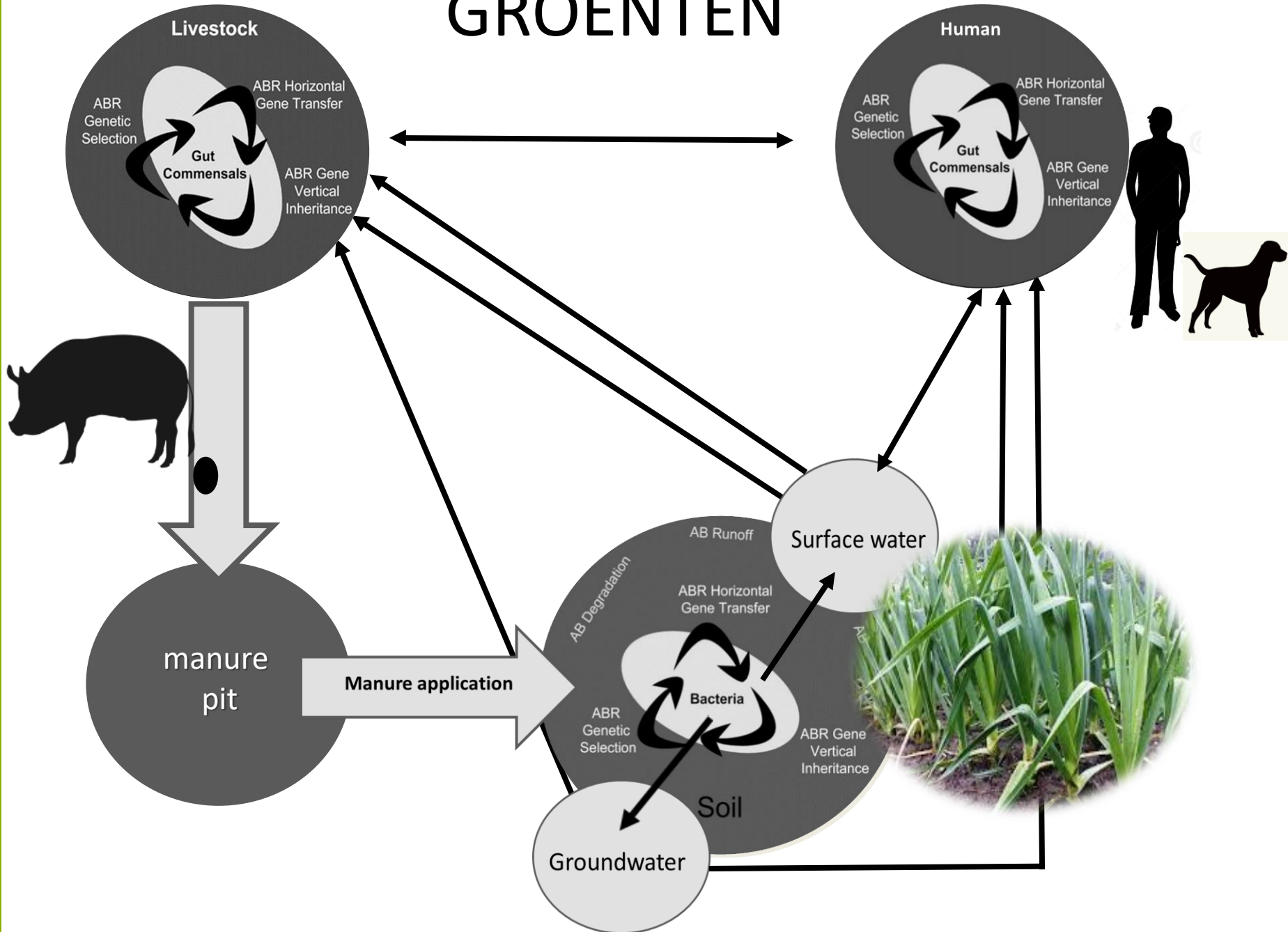


Resultaten worden binnenkort gepubliceerd door VMM

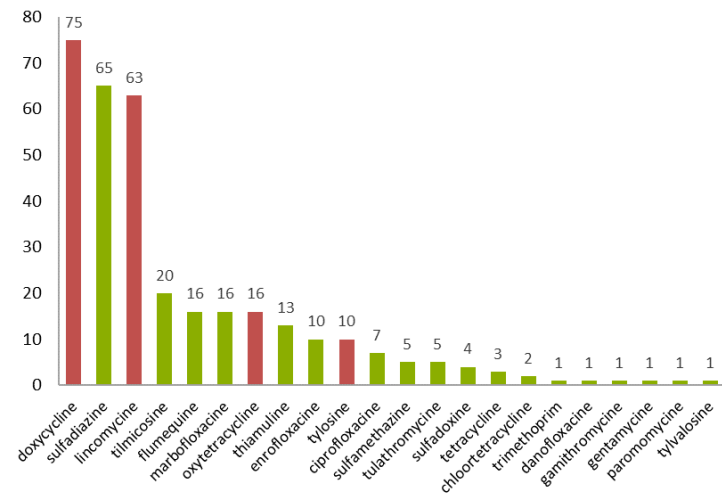
Resultaten in Nederland:



GROENTEN

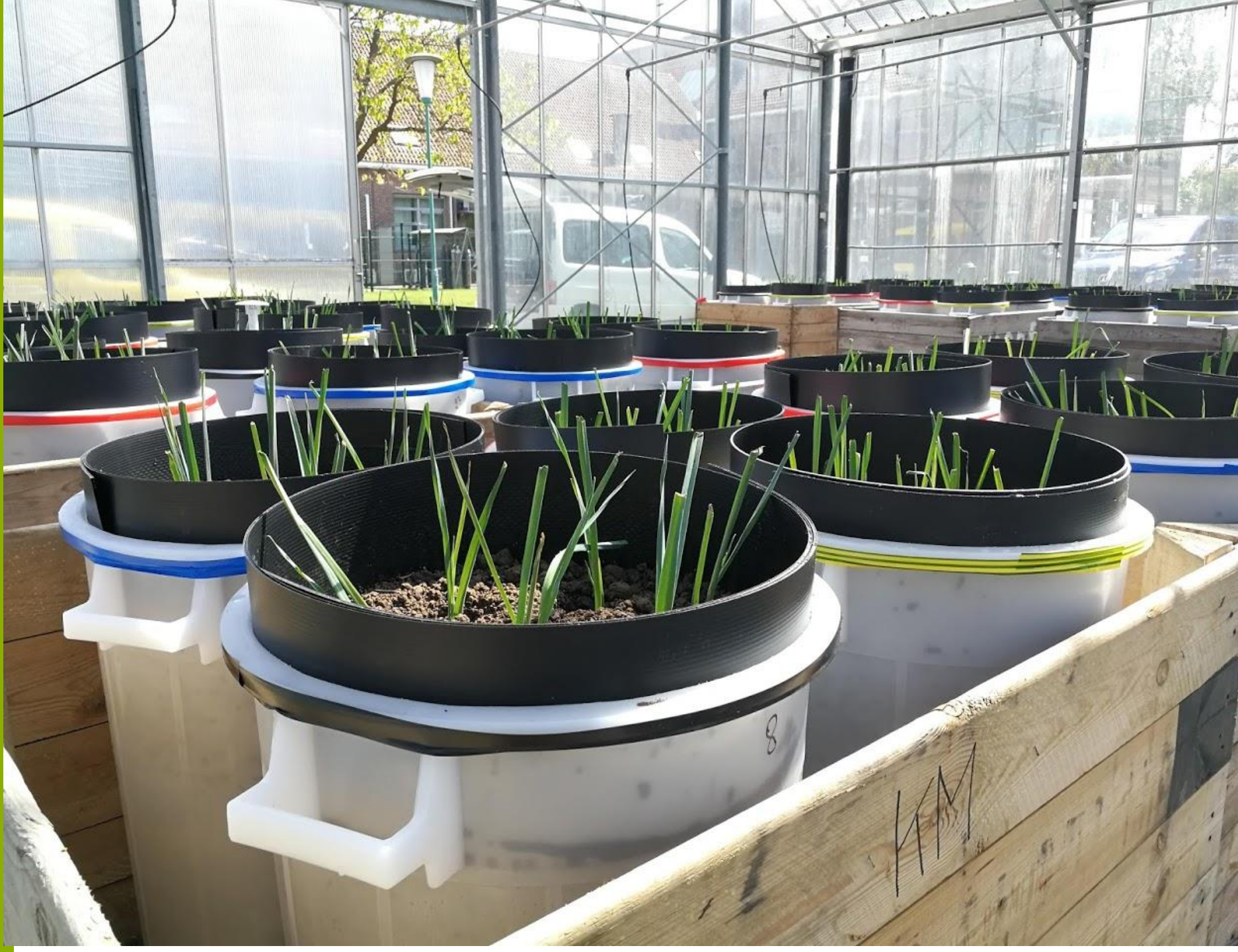


Experimental setup



PhD Judith Huygens – FOD project AMRESMAN





Dank u wel

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- Van den Meersche Tina
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