LEI Expertise Centre for Farm Management and Knowledge Transfer WUR

Analysis antibiotic use in dairy sector in The Netherlands

EAAP 2016

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Sales of pharmaceuticals in 2010 in the Netherlands

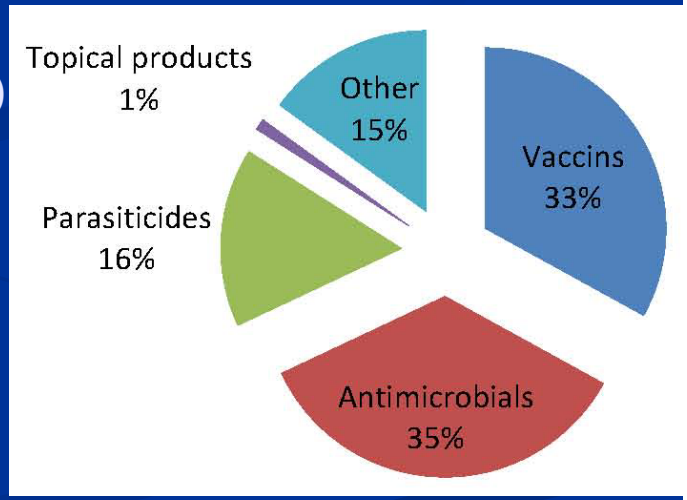
Drugs for human use total: € 6 billion

Comprising 6% antibiotics (€ 360 million)

Veterinary drugs total: € 250 million

Comprising 35% antibiotics (€ 87,5 million)

(>99% for food producing animals)

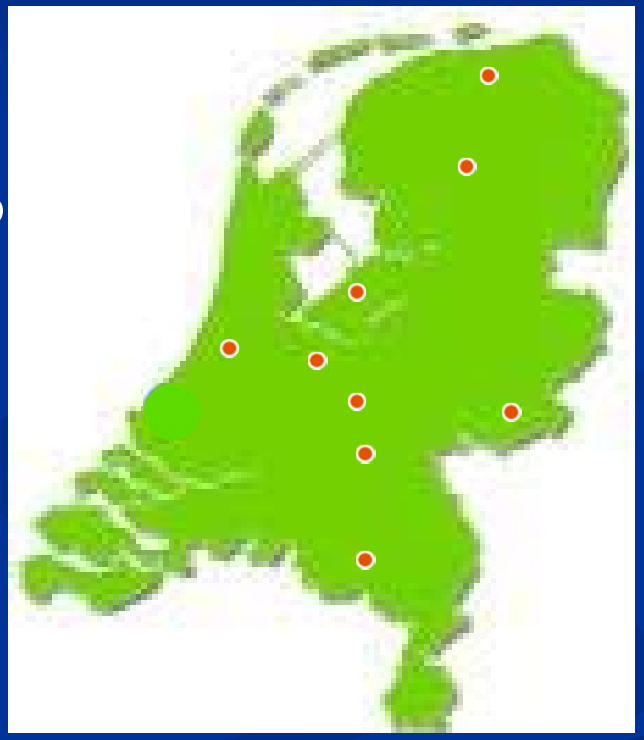


National projects
2005-2012

Farms from 30 Veterinary practices
also one environmental project group
1-10 dairymen each

Some groups guided, other not

- Total 94 farms



In: J. Dairy Science 99: 1632-1648

ON FARM LEVEL

INDICATION OF MEDICINE USE

No. daily dosages

Reflects exposure to antibiotics

Definition ADDD

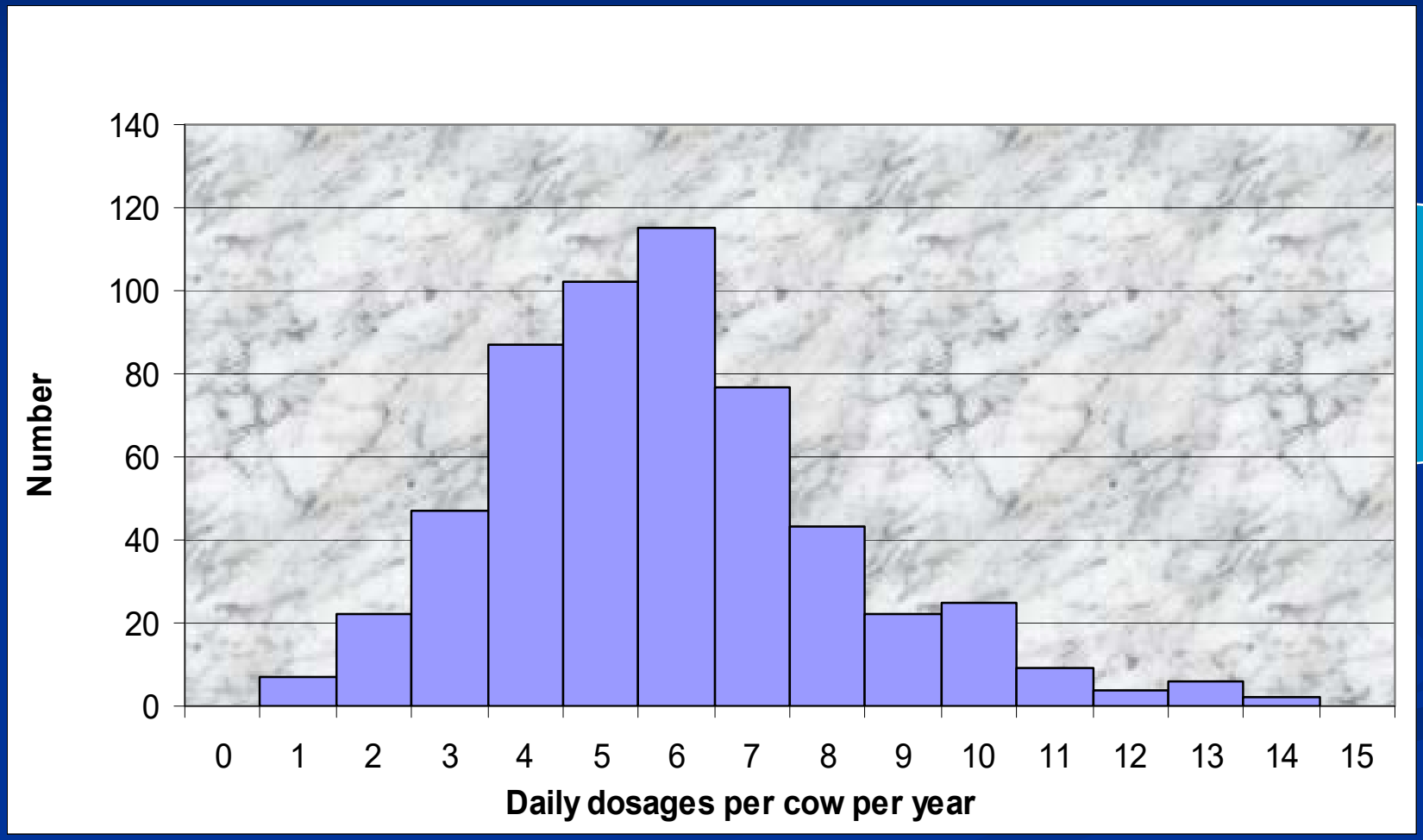
Number of daily dosages per cow per year indicates

how many days per year an average cow in the herd under treatment of antibiotics is

Based on veterinary invoices

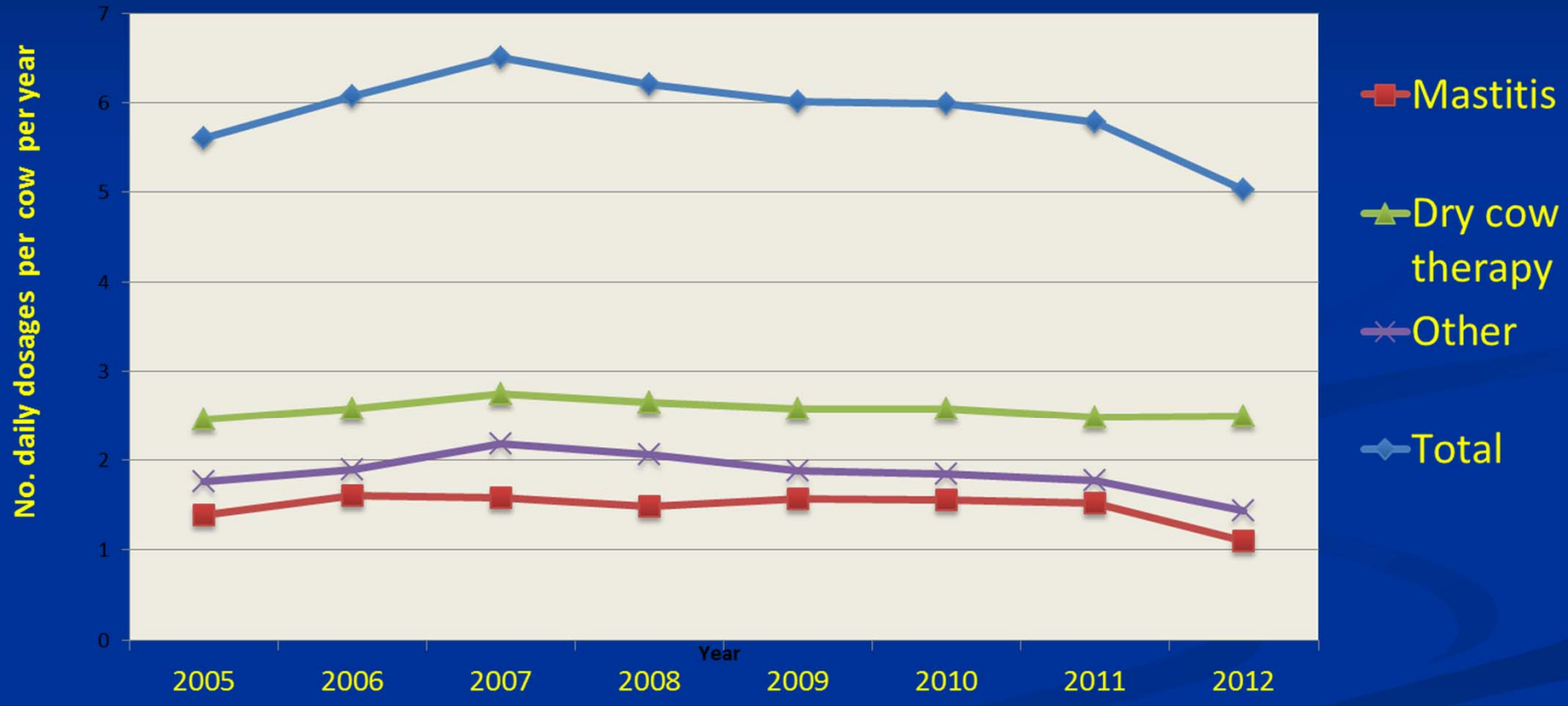
Youngstock is included

Daily dosages on anual basis

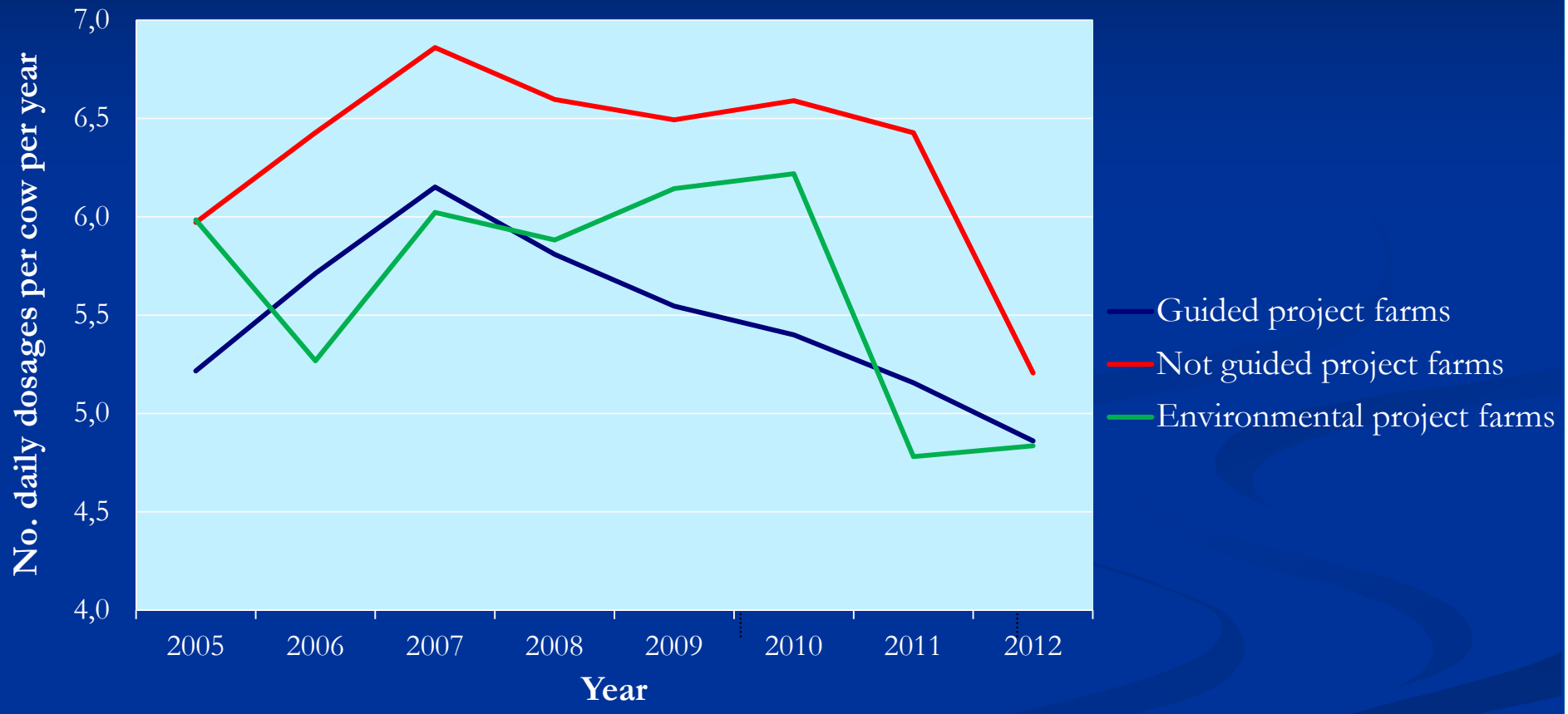


Avg.
5.84

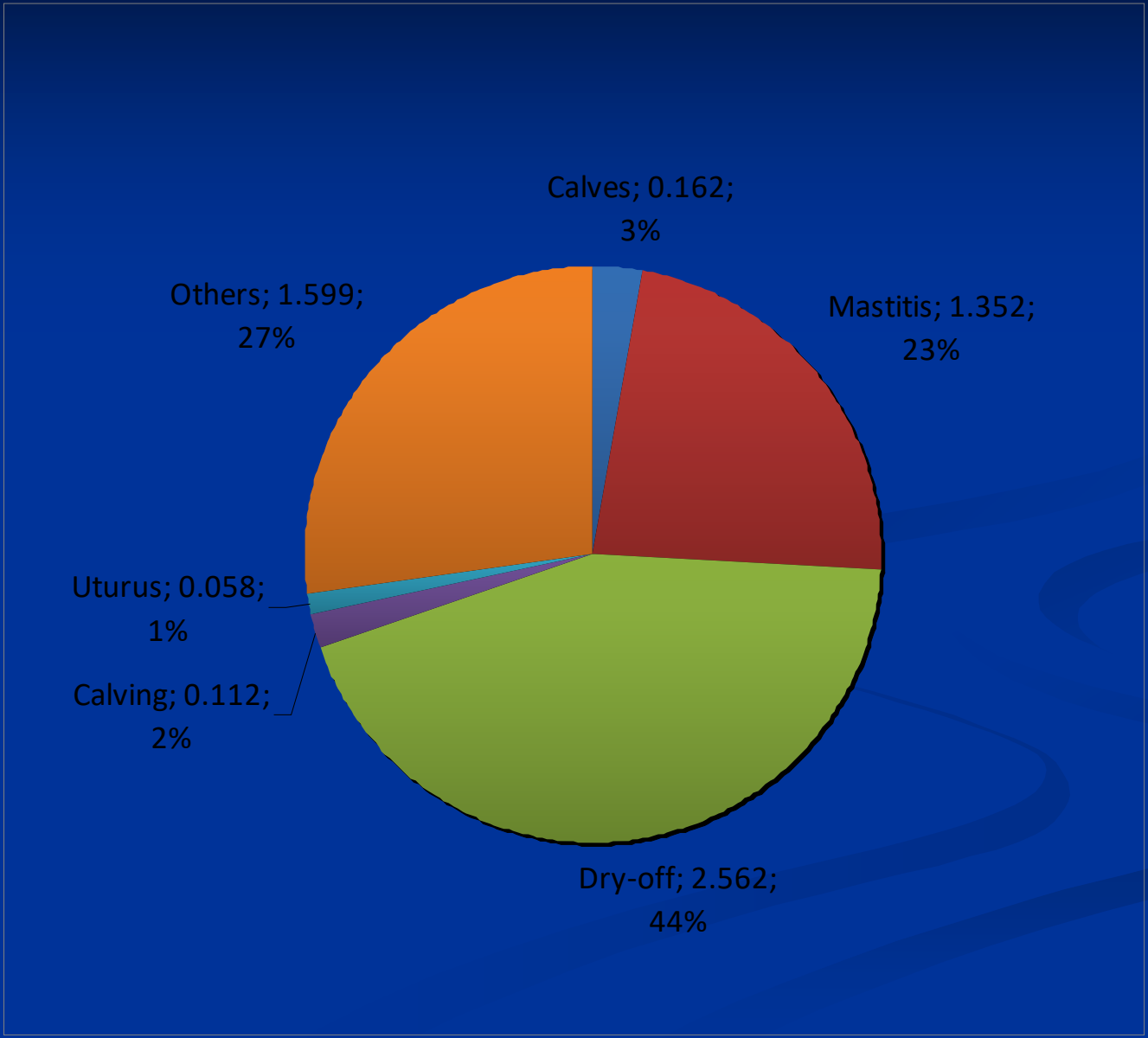
Trend in number daily dosages per cow per year



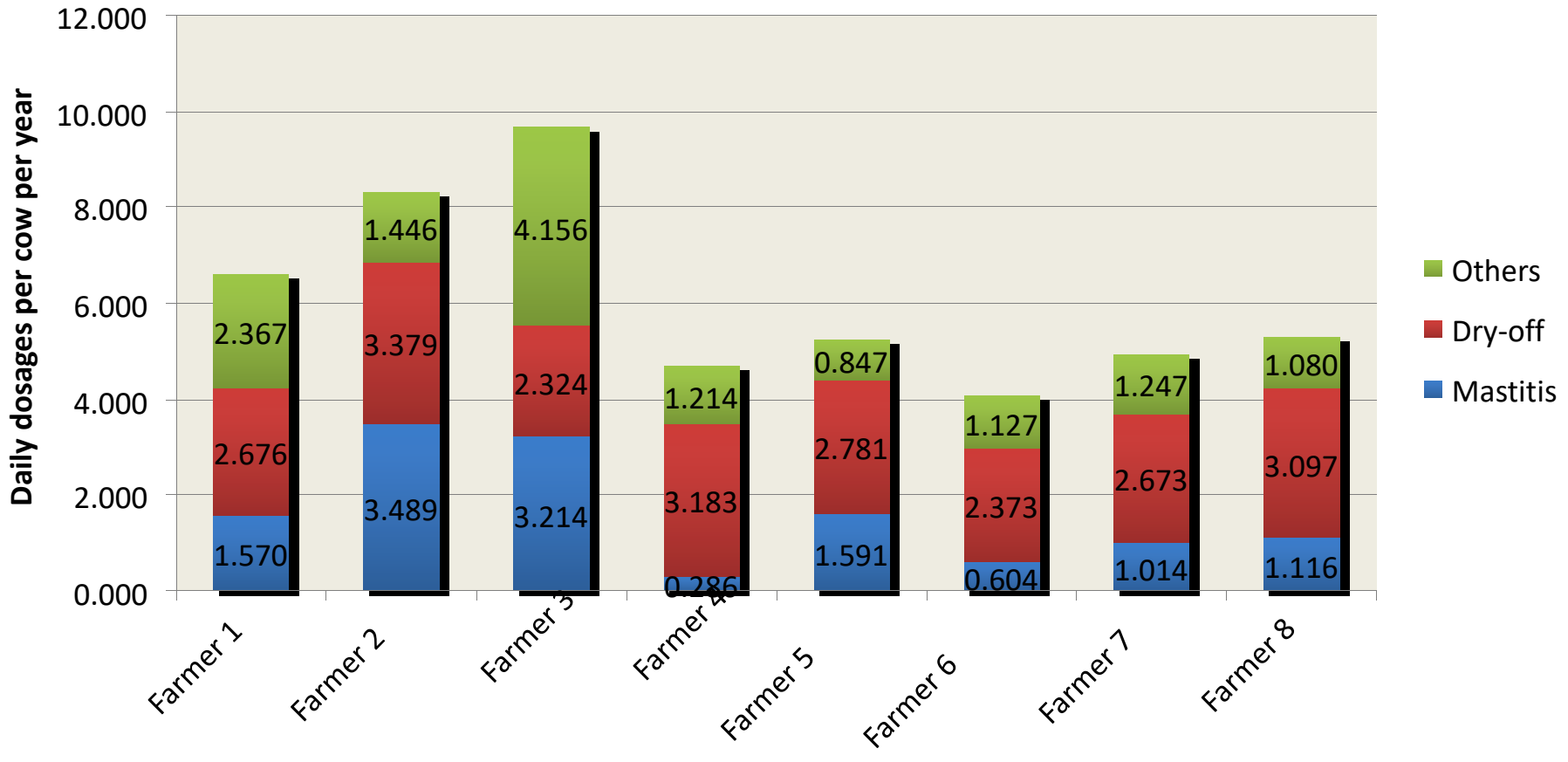
Trends of guided and not guided groups in period 2005-2012



Split up daily dosages in health categories (avg. 8 years)



Split up daily dosages for group of farms
(average over 8 years)



Restrictive use 3-4th generation antibiotics

Fluoroquinolones;
3-4th gen Cephalosporines

from 2011 on

3-4th generation 2005-2010	19%
2011	17%
2012	1%

Netherlands Veterinary Authority 2010

Execution of national policies;

Board and expert team independent;

Data from all farms are collected;

They assign benchmarks; advised to focus on reduction of antimicrobial resistance in stead of reduction in use

Goal: - 50% use in 2013 compared to 2009

Three groups of antibiotics:

- for animal use
- restricted use
- No, unless

Communication

Signaling threshold and action threshold values

- on cow herd level

Communication via Dairy companies' milk quality scheme

- on veterinarian level

One-to–one relation

Communication via Veterinary organisations' quality system

First overview of veterinarian applications in 2014

	Number veterinarians	Mean use	P90	P90/P10
Veal calves	135	12.3	25.4	33
Pigs	285	7.0	12.1	7
Broilers	89	12.2	25.7	-
Dairy cows	790	2.3	3.1	2.4

Reductions achieved

	Reduction in use (ADDD) 2015/2009
Veal calves	35%
Pigs	56%
Broilers	60%
Dairy cows	47%

Study: Farms increasing and decreasing in use

		Daily dosages		
		2005 - 2010	2011	2012
Farms	decreasing	7,23	5,09	4,30
	increasing	4,72	5,89	5,72

Do farm and farmer characteristics influence the amount of antibiotics used?

Data collected:

Farm and herd: 28 characteristics

- Production level; health; cell count; grazing

Farmer: socio-economic factors

-relation to veterinarian, to others

-attitude towards treatment of cow health problems

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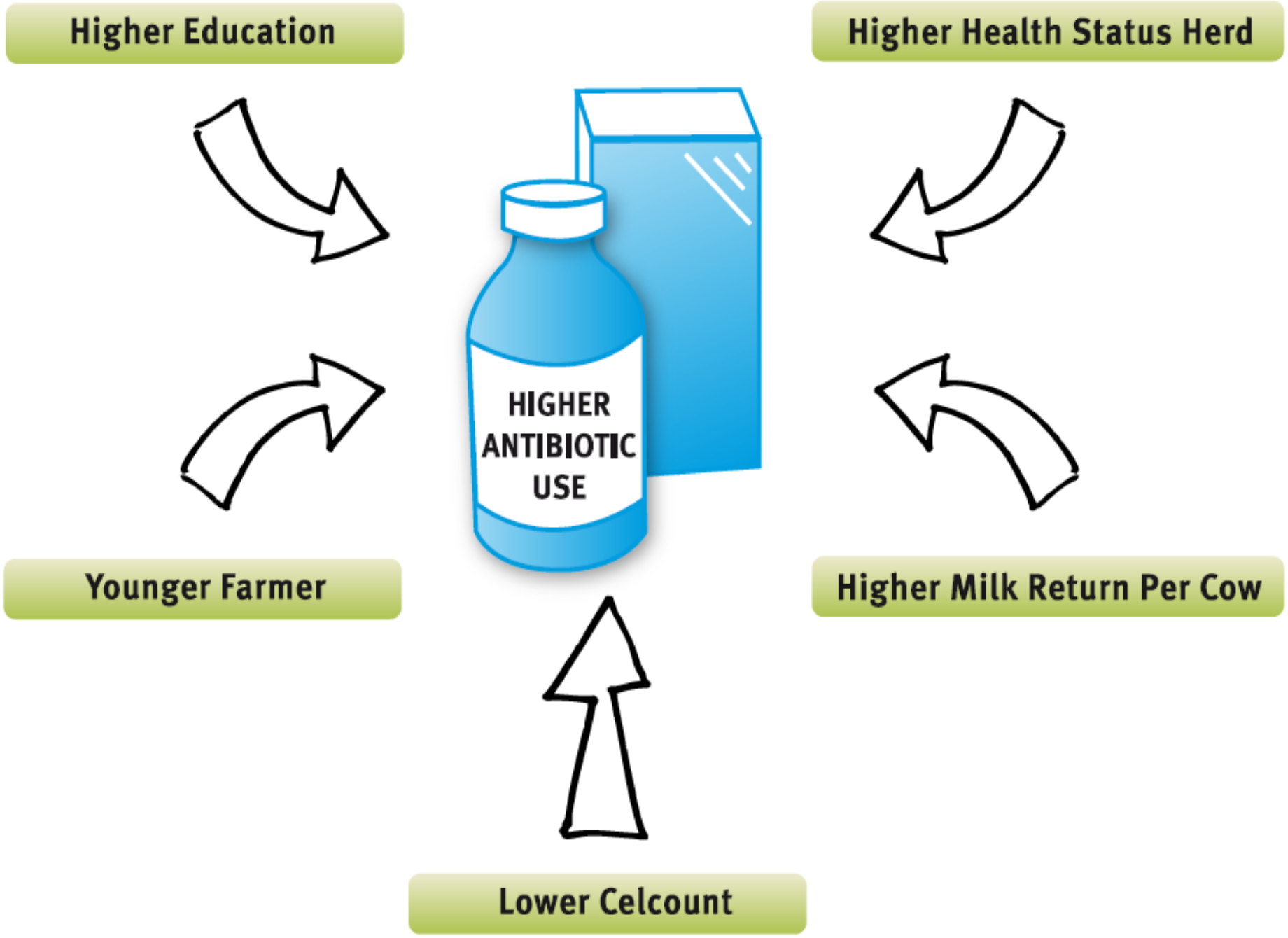
Influence of farm technical indicators (59 farms)

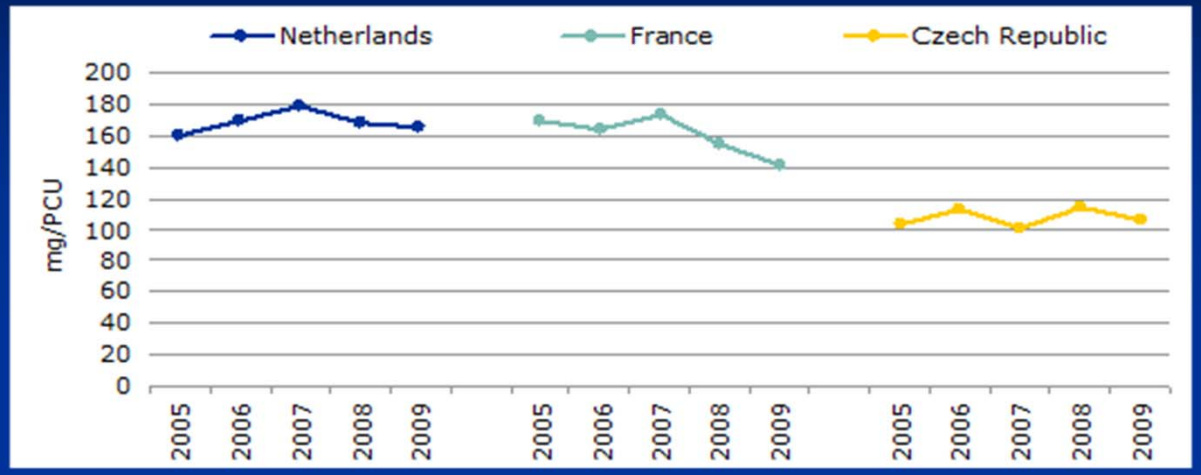
Antibiotics indicator	Farm factors of influence	Relation	R^2
Number daily dosages total	Quota Cell count Health status	+ – +	0,39
Daily dosages mastitis	Number of cows Quota Access to pasture	– + –	0,28
Daily dosages dry-off	Cellcount Calving interval Health status	- -0,50 - +	0,46
Daily dosages other	Quota Milk cows Young stock/10 mk % cows removed	+ – + –	0,36


Higher Education
Higher Health Status Herd
HIGHER ANTIBIOTIC USE
Younger Farmer
Higher Milk Return Per Cow
Lower Celcount

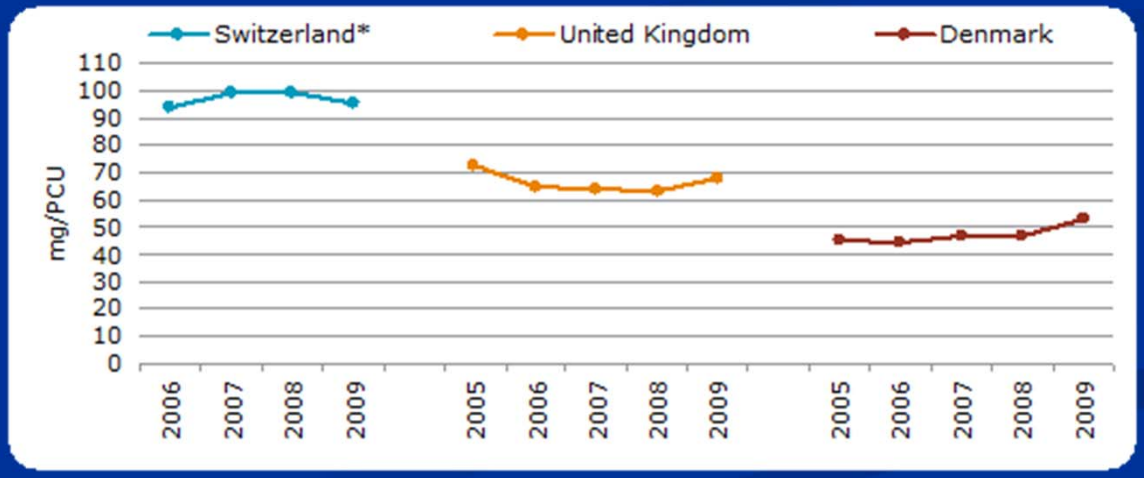
Conclusions

- Wide variation in use
- More than 65% of antibiotics to udder
- Trade off between level cell count and level antibiotics use
- Antibiotics use partly explained by farm characteristics
- Awareness raising of farmer and veterinarian succesful in lowering use
- Policies and regulation affected use also significantly

Total sales NL and other countries (EMA, 2011)



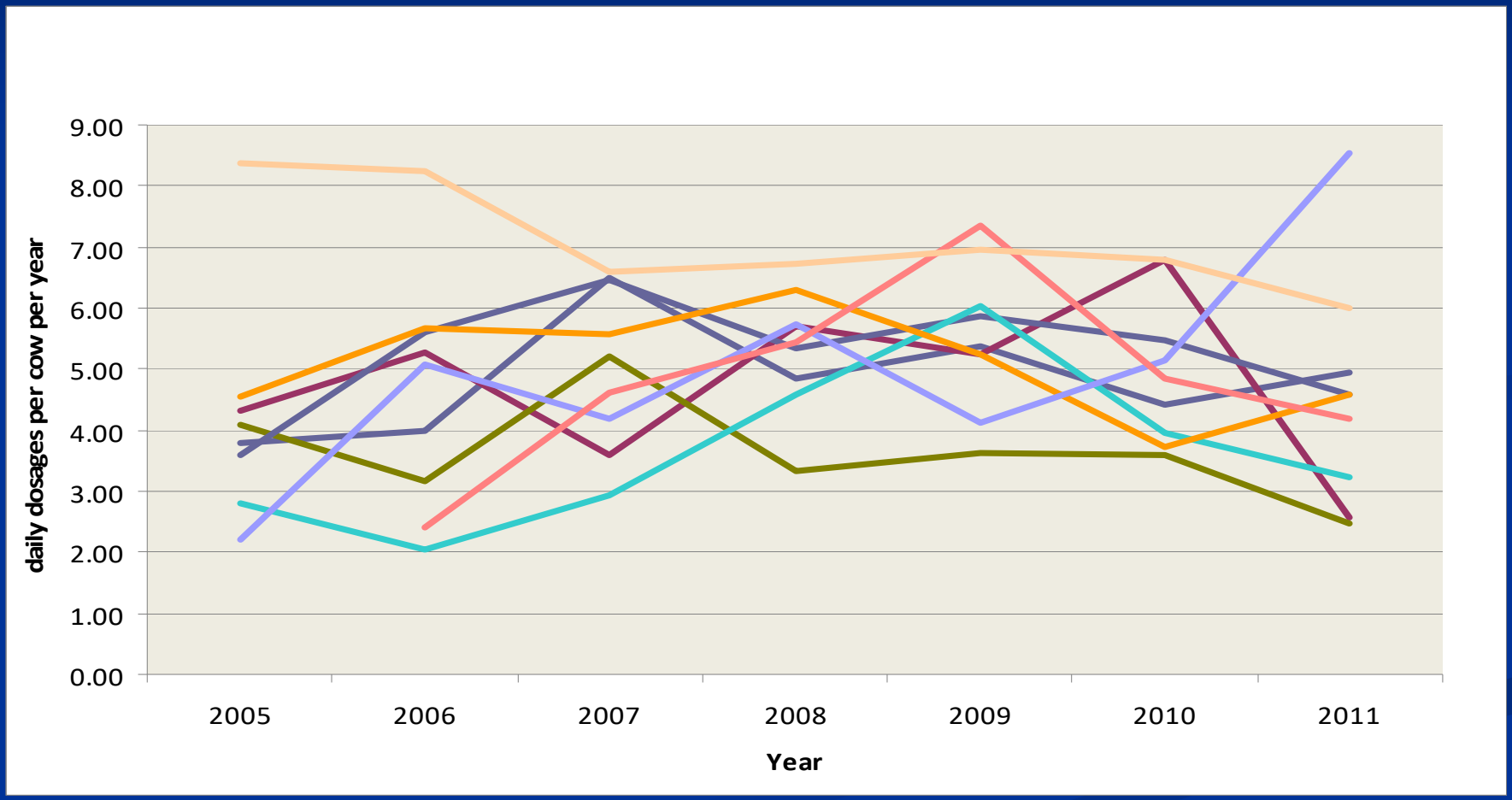
Note the differences in the scales



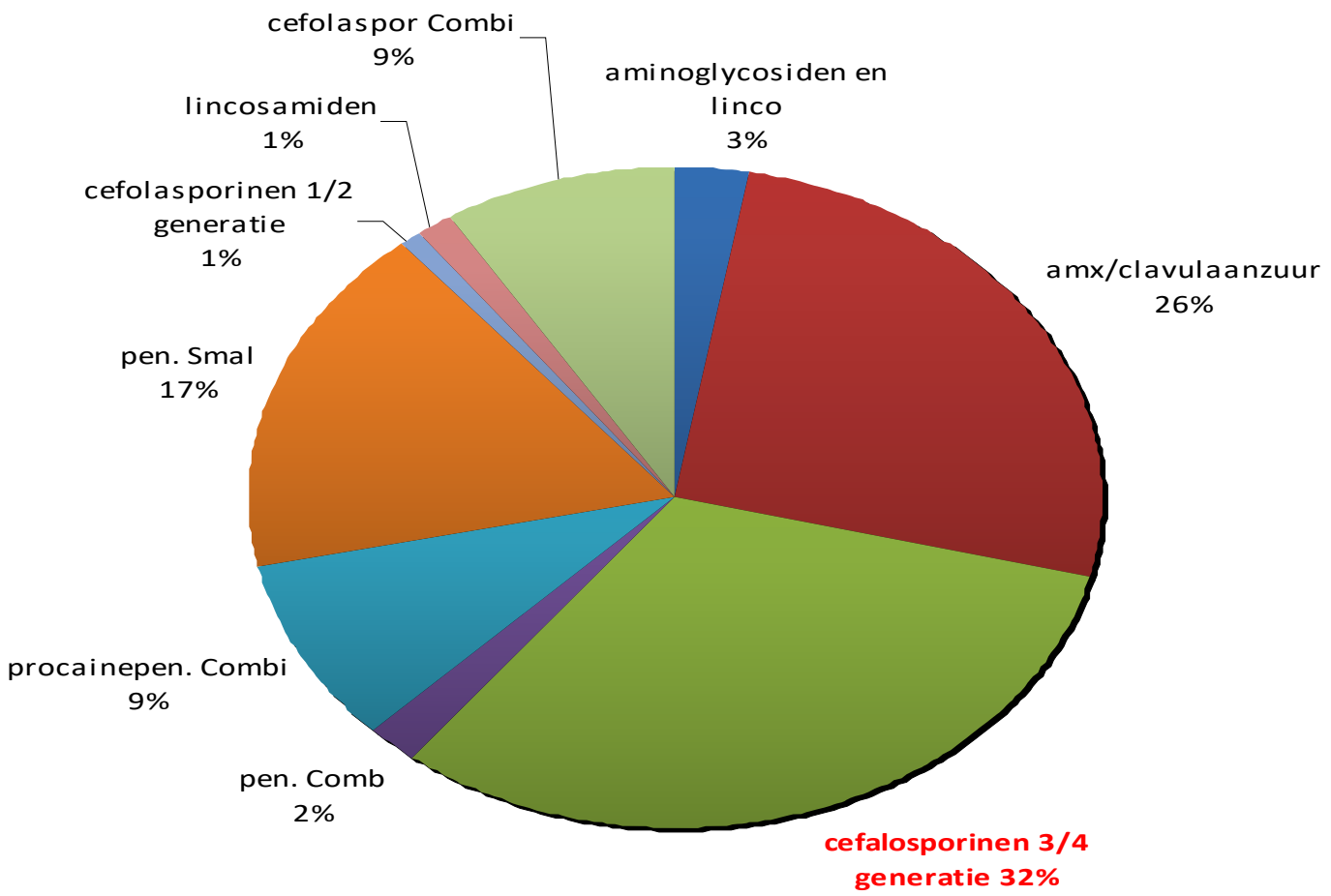
Influence social-economic factors (39 farms)

Antibiotics indicator		SO factors of influence		Relation	R^2
Number daily dosages total					
Daily dosages mastitis					
Daily dosages dry-off		..... Relation to veterinarian		+	0,5-0,6
Daily dosages other					

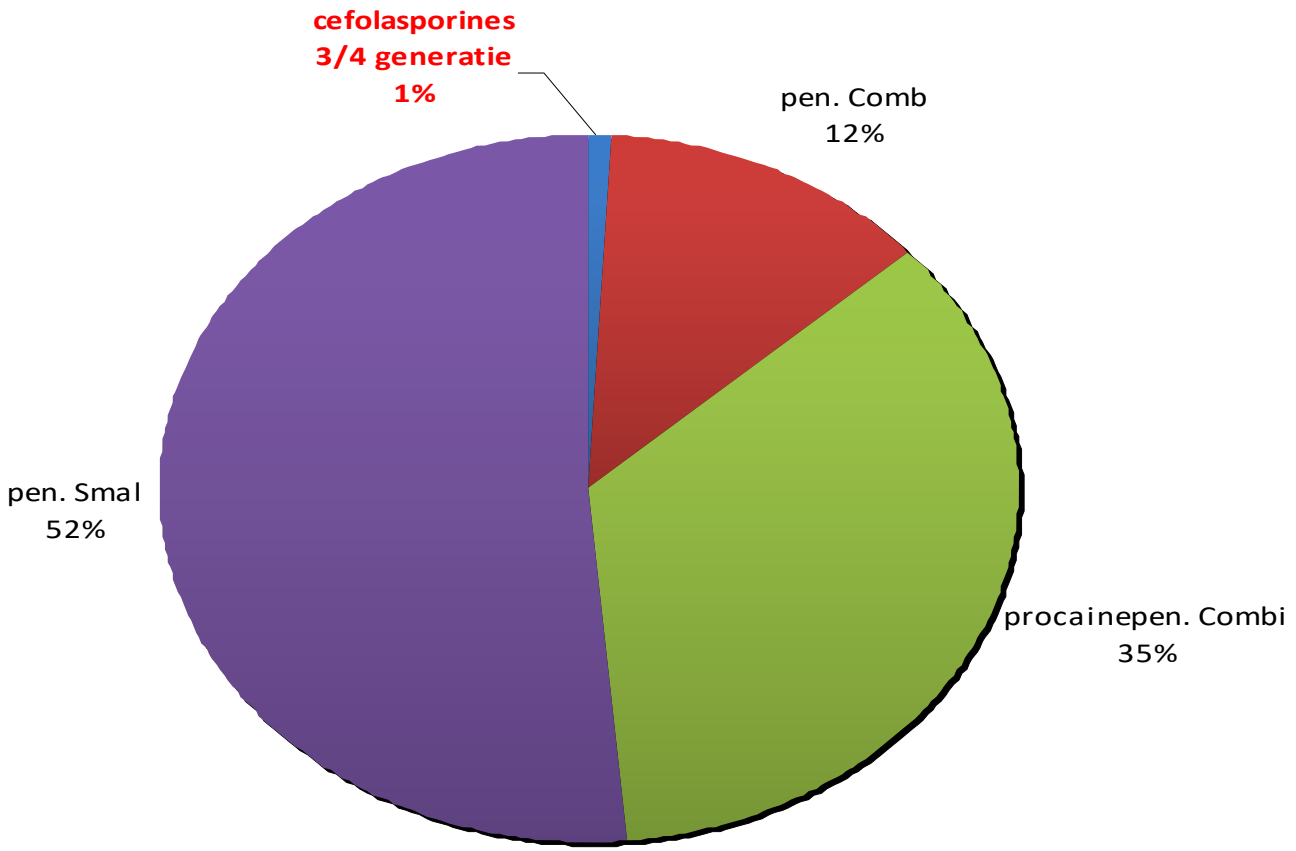
Trend daily dosages per cow year in veterinary practice Oosterwolde



Daily dosages mastitis split up in active substance (2005-2011)



Daily dosages dry-off split up in active substance (2005-2011)



Daily dosages other split up in active substance (2005-2011)