Control of Piglet (Enteric) problems

Symposium SIPAS MontiChiari 27-28/03/2014

F.Dirven
Lintjeshof

topics

- Introduction of Lintjeshof
- Dutch situation and antibiotic discussion
- Intake of colostrum/crossfostering
- Most common (enteric) problems
- Alternatives
- Conclusion and discussion

Lintjeshof Practice

- 30 vets/18 specialized in Swine, 4 locations covering the Netherlands, 2 locations in Germany and 1 in Belgium
- Consulting 350.000 Sows.
- The service we offer:
  - Vet expertise /consultancy
  - Diagnostic lab and monitoring
  - Pharmacy with product display


Nederweert
Dit bedrijventerrein is beveiligd!
LINTJESHOF
dierenartsen
diagnostiek
apotheek


25/11/2011


North Sea
Baltic Sea
DEN.
Kiel Canal
Neuendorf bei Wilster
Kiel
Rostock
Lübeck
Bremerhaven
Hamburg
Wilhelmshaven
Bremen
BERLIN
POL.
Hannover
NETH.
Magdeburg
Duisburg
Essen
Leipzig
Elbe
Düsseldorf
Kassel
Dresden
Cologne
Bonn
BEL.
Wiesbaden
Frankfurt
Rhine
CZECH REPUBLIC
Mannheim
LUX.
Saarbrücken
Nürnberg
Karlsruhe
Stuttgart
Danube
FRANCE
Munich
AUSTRIA
Zugspitze
SWITZ.
LIECH.
0 50 100 km
0 50 100 mi

Dutch sector structure

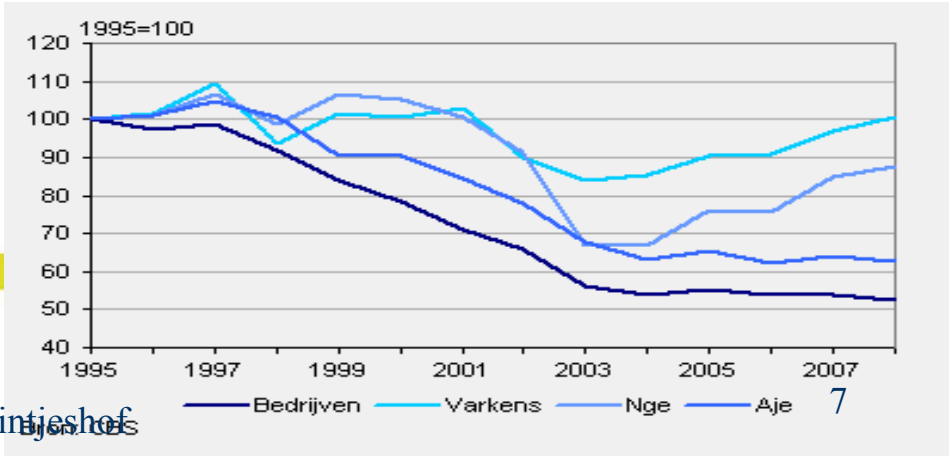
- 900.000 sows producing 23 mio piglets and 12 mio fatteners.

- 14 mio slaughtering in nl (Vion)
- 9 mio piglets exported (5-7 mio to Germany)

- Total pig farms in 2008 - 4.050 (1990- 20.000)
- Expectation 2015 2500 farms

Current situation

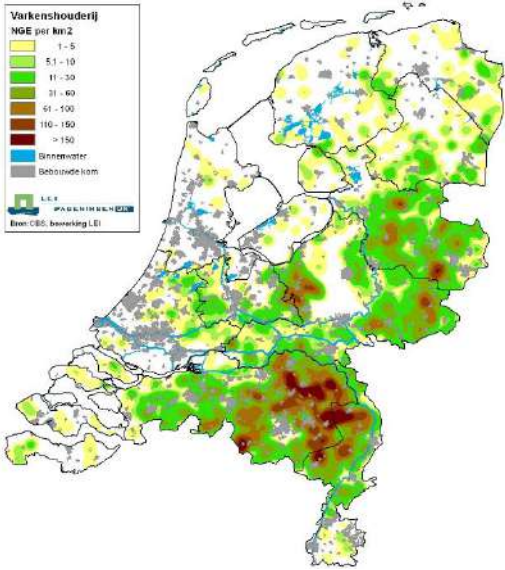
- Farms are becoming bigger (1000-5000 sows), small breeding farms disappear
- Productivity is going up to 31 piglets / sow / year
- Producer is more dependant on export (large units up to 5000 sows)
- NL is exporting, Italy is importing.



Data

- Netherlands: 27.5 piglets/ sow/ year
- Liveborn litter 13,3
- ADG 800 GR (FCR 2,62) mortality 2.3 %
- Topfarms: 28-33 weaned piglets/year!!
- Production cost piglet 25 kg: 50 euro
- Per sow highest production (kg) of meat per year (followed by Denmark and France)
- Productioncost of 1kg pork : €1.46
  EU average: €1.56

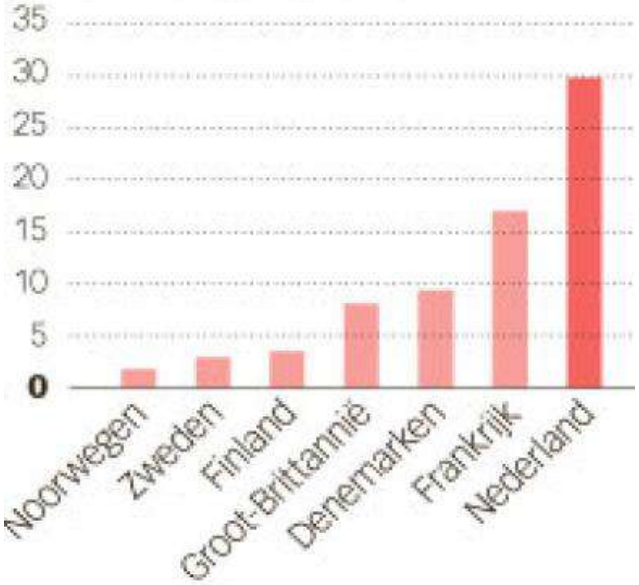
Facts



- Strong focus on low costs (scaling up)
- A lot of transport movements between farms (continuous production systems)
- Higher health is difficult to obtain (many diseases,)
- Spf is difficult to maintain(density)
- Too much antibiotics (political statement)
- No general support for megafarms

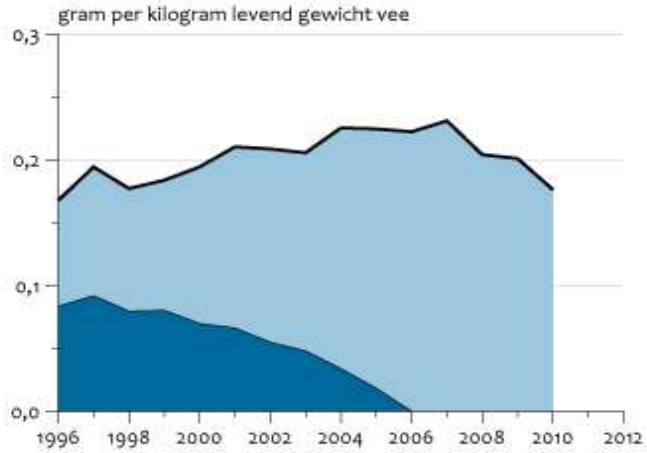
NEDERLANDS VEE KAMPIOEN-SLIKKER

Aantallen dagdoses antibiotica per dier per jaar, in 2006



100809 © de Volkskrant - rvdm. Bron: Maran-rapport 2007

Antibioticagebruik veehouderij

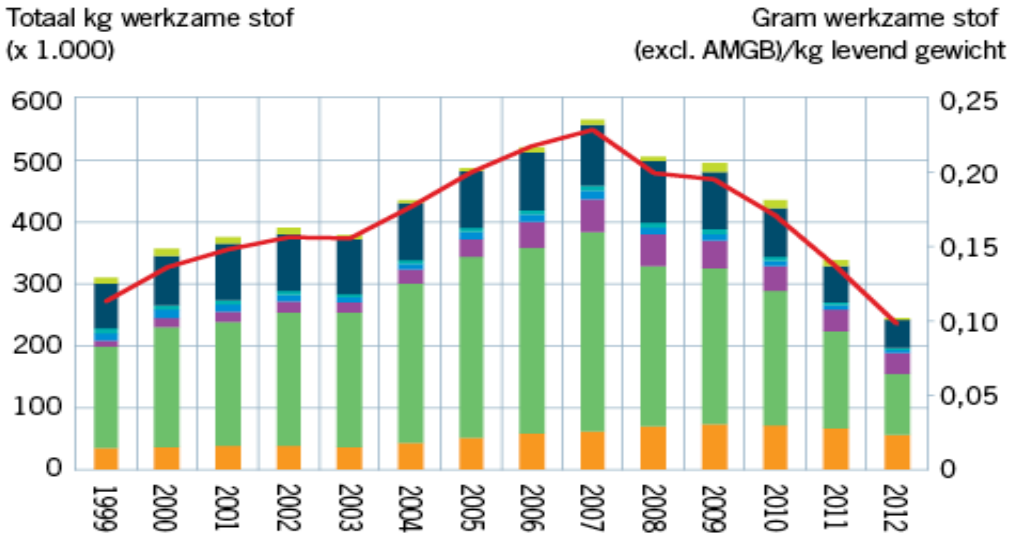


Bron: HDIN, CBS.

PBL/jun11/0565
www.compendiumvoordeleefomgeving.nl

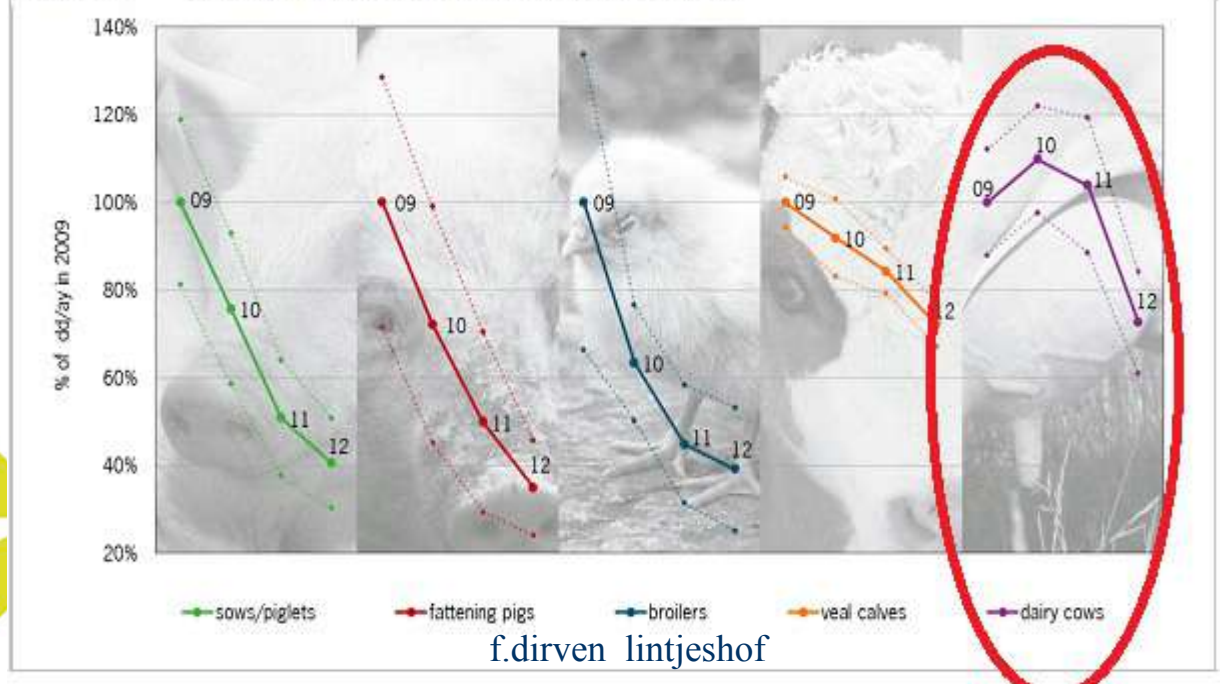
Figuur 5.3

Trend in verkopen van antibiotica voor therapeutisch gebruik bij dieren

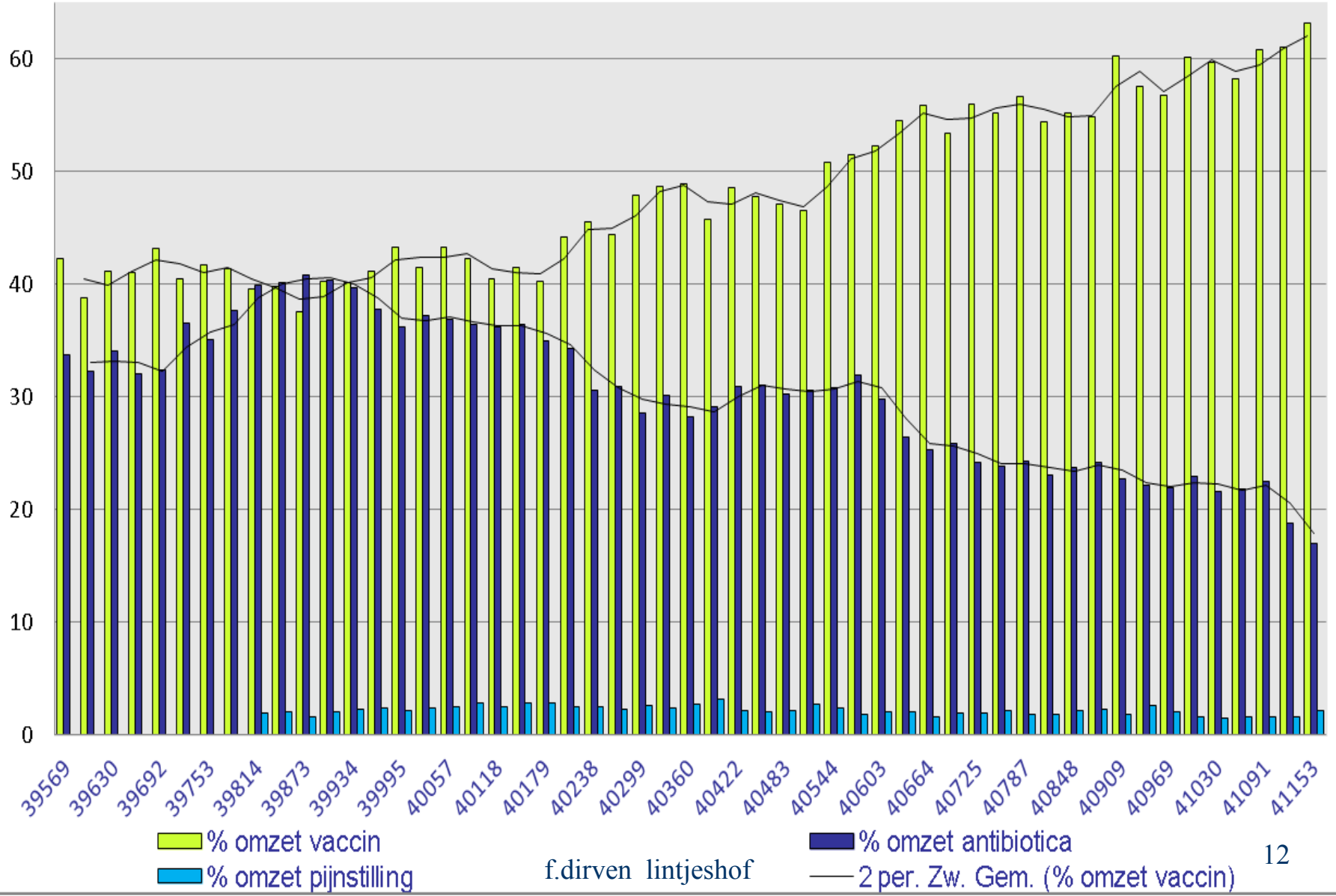


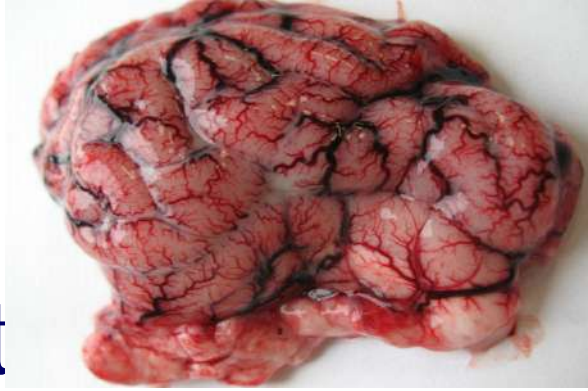
Bron: FIDIN, bewerking LEI Wageningen UR.

Figure 4.1 Trends in antibiotic use per species, 2009-2012 a)



Vaccin / Antibiotica / Pijnstilling verbruik in %
DAP Lintjeshof 2008-2012





Reduction of antibiot

- Prudent use (dosage, days, diagnosis), ddd, benchmarkting, formularium (no cephalo's no quinolonen)
- Alternatives (MCFA's, probiotics , immune stimulation products, vitamines)
- Vaccines (clos, pia, circo, myco, prrs, flu etc), combinations
- Symptomatic therapies in case of viral diseases (metacam, paracetamol)
- Strong Focus on higher health and health management

HEALTH

- Reduction antibiotics, no resistance
- 40% of genetic potential not met – more efficient production
- Safe, no residue ,
- Less diseases- more wellfare
- Higher production

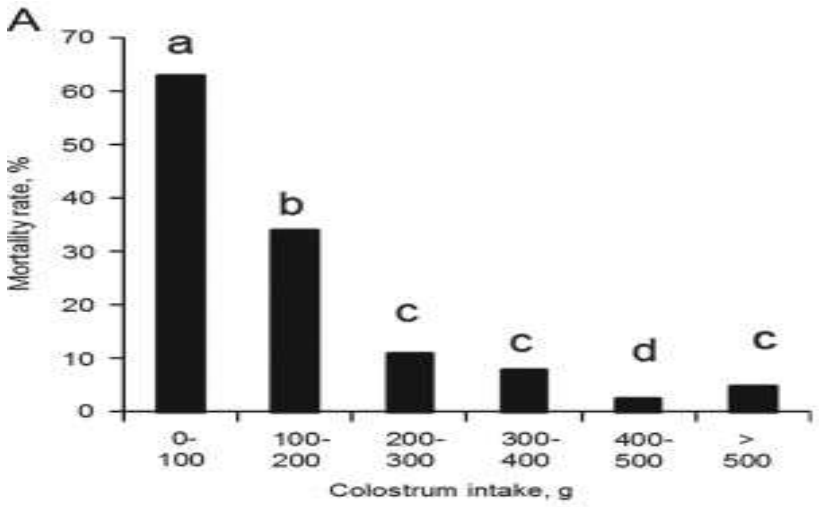
- **sustainable – safe – efficient = RETURI**

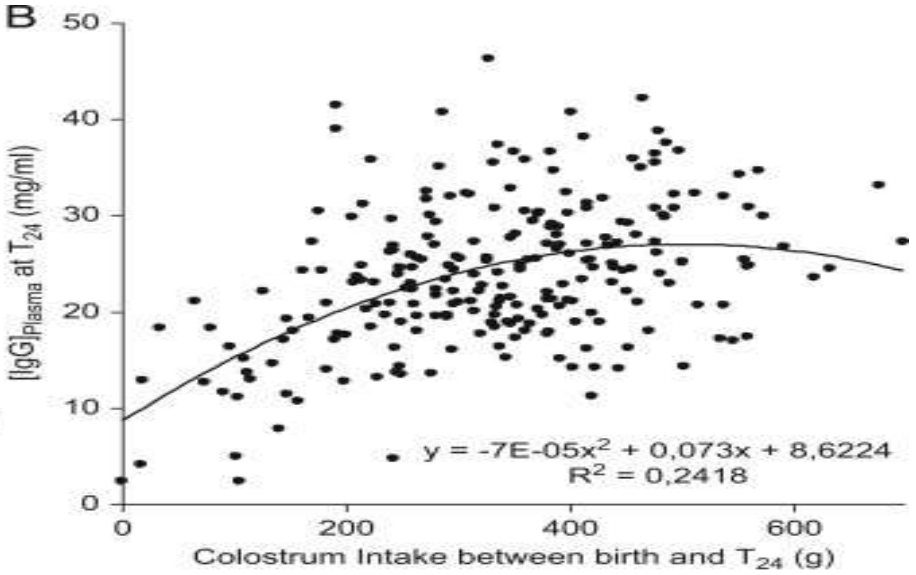
Piglet problems: 5 Factors

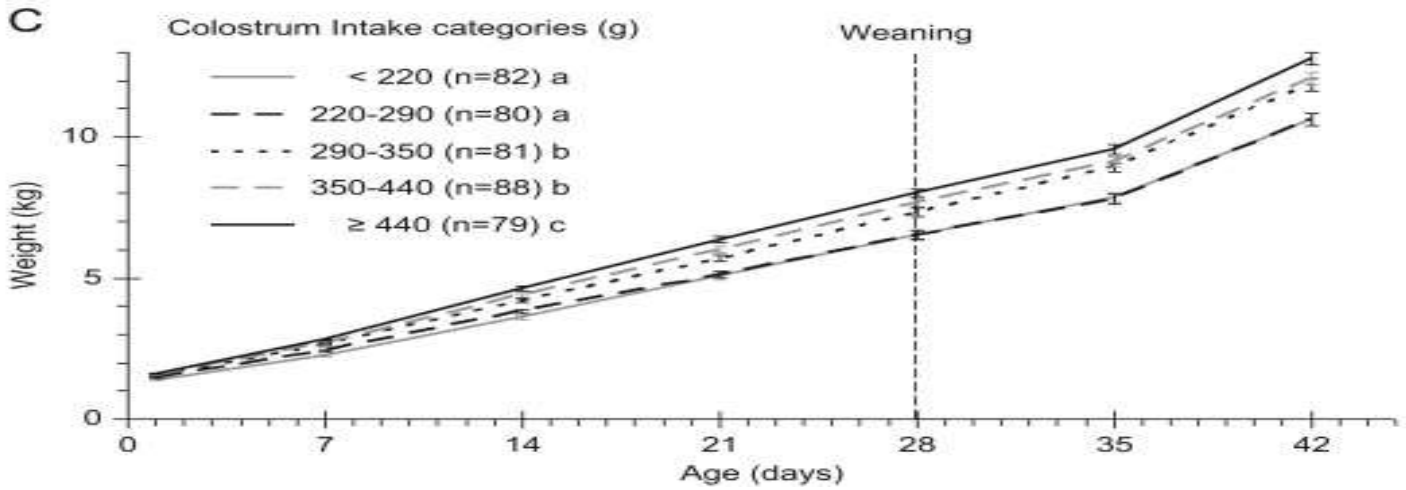
- SOWS (colostral and milk production)
- PIGLETS (colostral intake, bodyweight)
- CROSSFOSTERING
- MANAGEMENT (hygiene, temperature)
- INFECTIONS

Colostrum intake (200 -600 gr)

- The first piglets
- Body weight
- Piglet body temperature
- Sow secretion (MMA, FEEDING)
- 14 piglets (400 gr) ca 5-6 l colostrum (= max production)


A
Mortality rate, %
70
60
50
40
30
20
10
0
a
b
c
c
d
c
0-100
100-200
200-300
300-400
400-500
> 500
Colostrum intake, g


B
[IgG]Plasma at T24 (mg/ml)
50
40
30
20
10
0
y = -7E-05x2 + 0,073x + 8,6224
R2 = 0,2418
0
200
400
600
Colostrum Intake between birth and T24 (g)

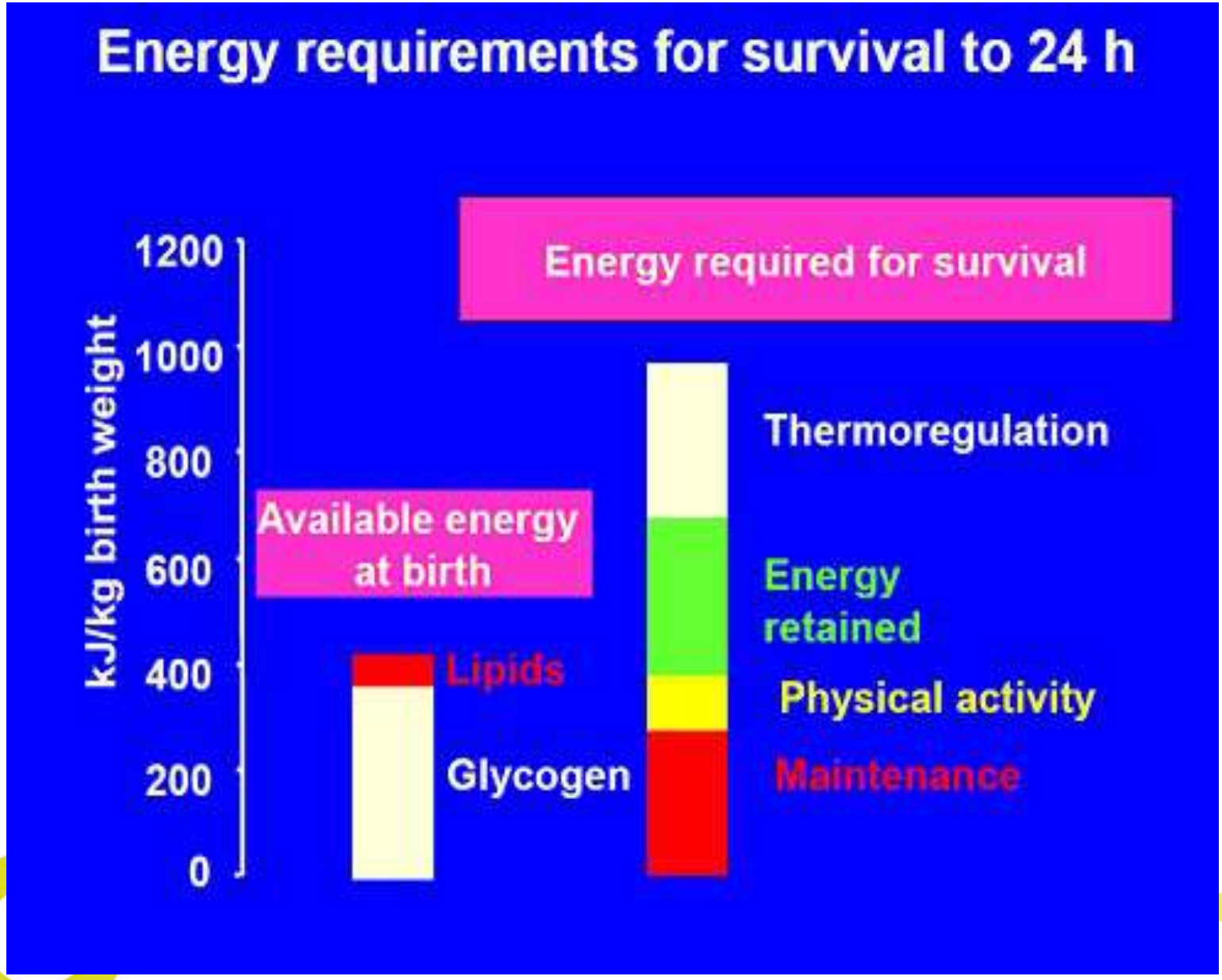

C
Colostrum Intake categories (g)
< 220 (n=82) a
220-290 (n=80) a
290-350 (n=81) b
350-440 (n=88) b
≥ 440 (n=79) c
Weaning
Weight (kg)
10
5
0
0
7
14
21
28
35
42
Age (days)

Colostrum composition

- High Fat – energy
- Immunity Ig G, Ig A
- Proteins
- Lactose
- Electrolytes
- 2-5 litre

Energy reserve of the piglet at birth

		piglet	lam	baby
Glycogeen (gr/kg BW)	reserve in the liver	2.5	1.5	3.8
	reserve in the muscles	12.2	9.6	6
	Available energy from glycogen	300	230	200
Fat (gr / kg BW)	Total fat reserve	11	25	150
	Available energy from fat	210	560	6500
Total available energy at birth (kJ/km l.g.)		**510**	**790**	**6700**


Energy requirements for survival to 24 h
kJ/kg birth weight
1200
1000
800
600
400
200
0
Energy required for survival
Available energy at birth
Lipids
Glycogen
Thermoregulation
Energy retained
Physical activity
Maintenance

How it works

- Oxytocine release (dripping)
- Sow snoring – 1-4 minutes, release just 20 sec colostrum (every hour)
- 200 -600 ml total intake (36 hours)
- Negative infl. Stress, pain disturbing etc.

Importance

- 50 % piglet losses first 3 days, energy
- 16-17 live born piglets (lower weight), high production, higher losses ????
- Transmission sow – piglet, imuneglob.
- Vaccination moment (prrs, myco, app)
- Persistent bacterial problems after weaning (no antibiotics)

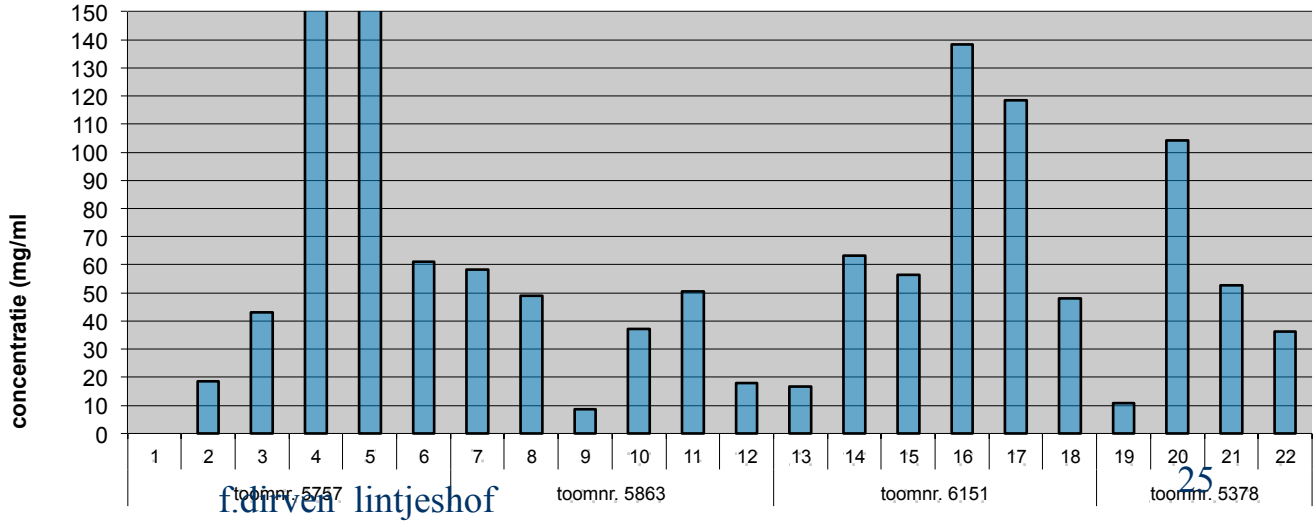
Practical

- First hours very important
- Best colostral intake from natural mother
- Split drinking, large litters
- Crossfostering after 12 h. (1-3 days)
- Amount of piglets according udder capacity
- Selection of weak piglets
- Motherless early weaning
- Extra colostrum supply


A series of RescueDecks positioned above farrowing crates.

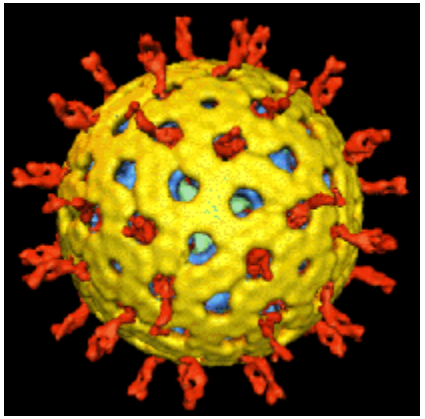
Colostral scan

- IgG elisa blood test
- 5 piglets (day 2) 5 diff. litters (25 samples)
- Ig G > 20 mg/ml (absolute min.)
- Variation between litters
- Variation between piglets



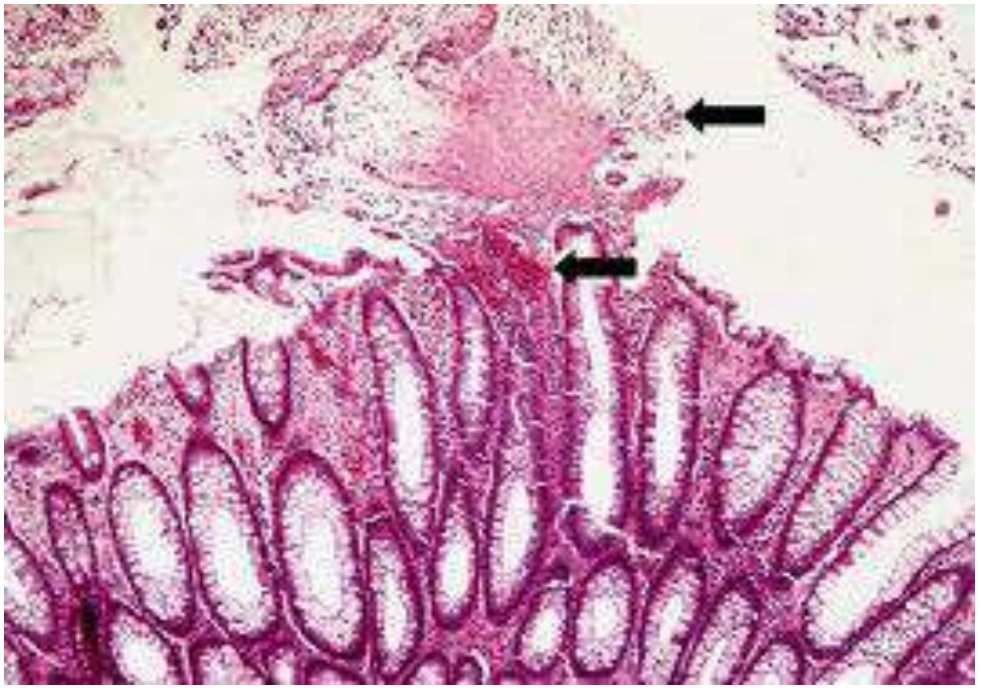
Viral Infektions

- Corona:
  - Tge
  - Ped
- Rota
  - day 3-4-5 until 3 Weeks
  - Fluid yellow diarrhea
  - Almost no losses
  - No reaction on antibiotics
  - Decrease of intestinal villi
  - Secundairy clos and e. coli infections
  - Vaccination ???? No sow vaccin (off label cattle vaccin)
  - Reiinfection sows with piglet faeces (soup)



Bacterial infektions

- E. coli
- Clostridium
  - Perfringens
  - Difficile
- Salmonella
- Brachyspira
- Lawsonia (Iliitis)



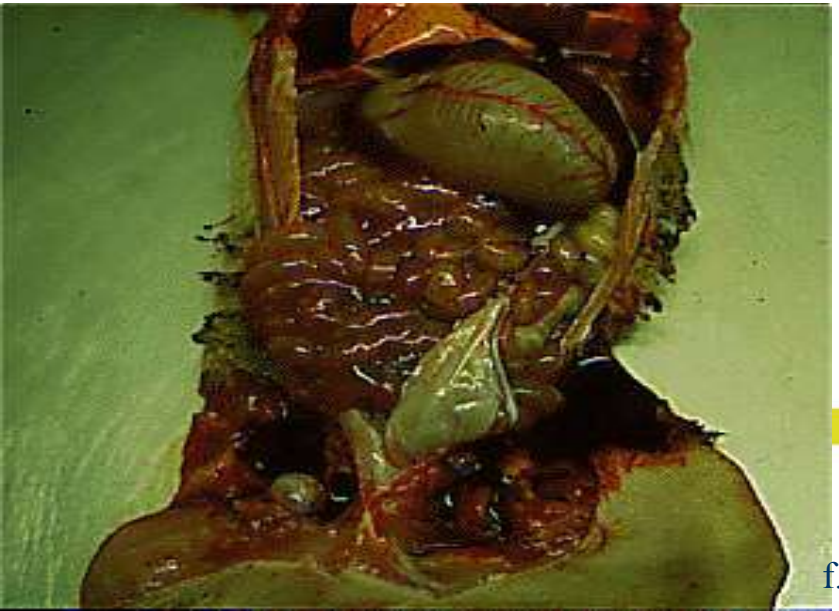
E. Coli

- many types and serotypes (k91, k88, k99 etc), toxoid production (shiga) = oedema disease
- Not all pathogenic types
- Sow faeces/Floors always carrier
- Neonatal diarrhea (acute)
- Diarrhea after weaning, oedema disease
- 40kg L.G.

E. Coli

- High infection pressure in sow herd
- Introduction new type (buying new gilts !!!!)
- Housing, room/nest temperature.
- Combination with rota/corona and clostridia
- Sow milk composition (Colostral production) (neonatal diarrhea, steathorea)
- Feed composition after weaning (high non resorbtion proteine)
- Fast antibiotic therapy and rehydration
- Vaccination sows
- Vaccination piglets (Shiga tox)

E. COLI

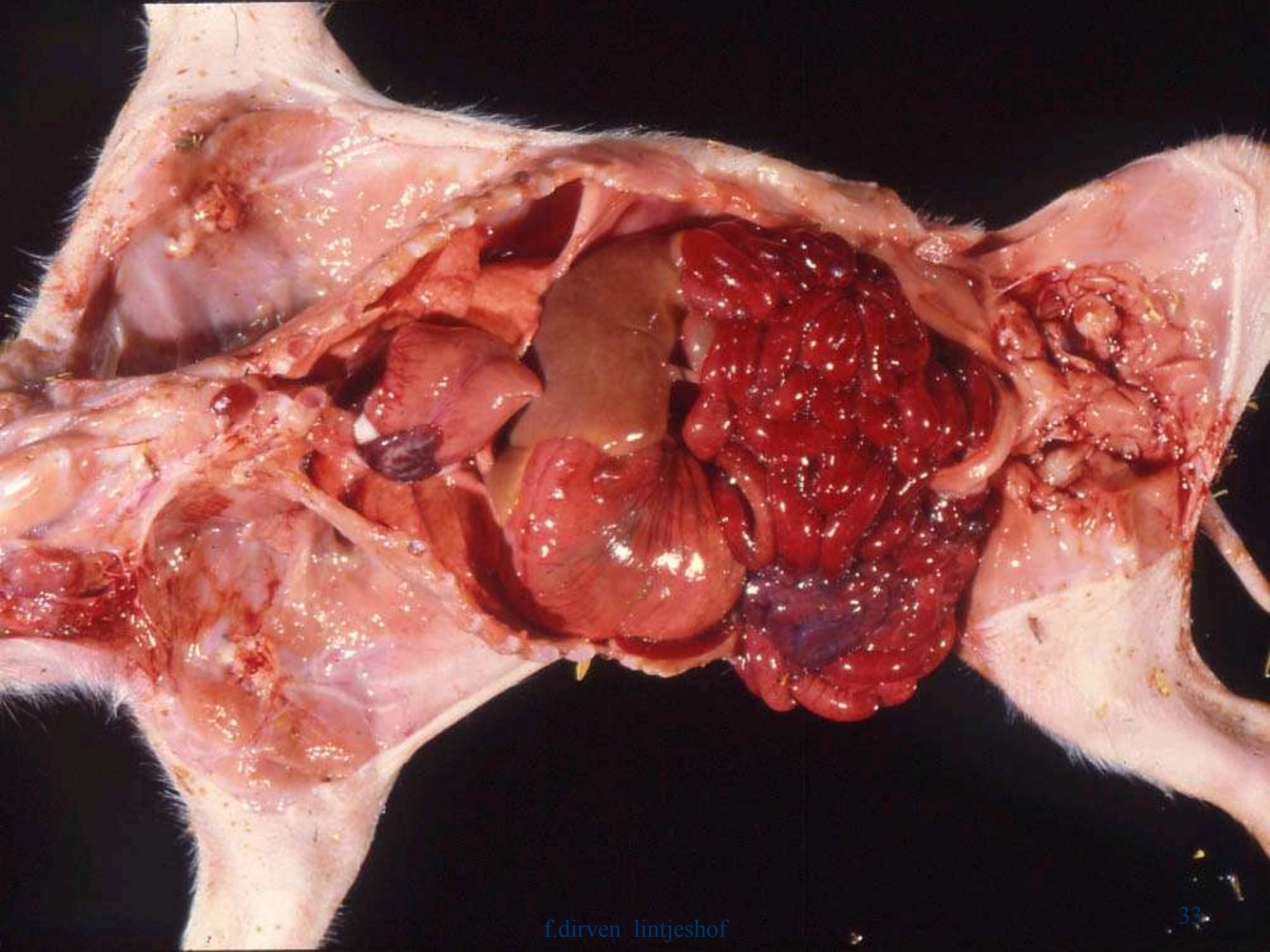


Clostridia infections;

Naam	Covexin 10	Covexin 8
C. *perfringens* Type A	α - Toxine	
C. perfringens Type B	β - Toxine	Anacultuur
C. perfringens Type C	β - Toxine	β - Toxine
C. perfringens Type D	ε - Toxine	ε - Toxine
C. chauvoei	Volledige bacterium	Volledige bacterium
C. novyi	Novyi α - Toxine	Anacultuur
C. septicum	Septicum α - Toxine	Septicum α - Toxine
C. tetani	Tetanospasmine	Tetanospasmine
C. sordellii	Sordellii toxine	
C. haemolyticum	β - Toxine	Anacultuur

Clostridium infektions

- serotype C and A
- Sow faeces/floors
- Toxoid production:
  - First 1-5 days until 3 weeks
  - Haemorrhagic/blood Diarhea
  - Many acute losses/blue coloured abdomen
  - Mostly in combination rota/coli
  - Antibiotics, rehydration
  - Sow vaccination (NOT ALL serotypes, autologous vaccin)
  - Hygiene
  - Probiotica (sow feeding, cleaning)

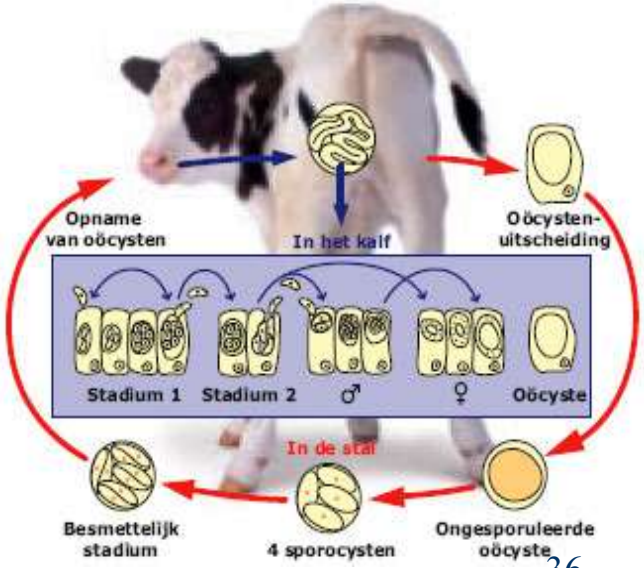


C. difficile

- More Farms infected (danish > 25 %)
- Until 7 days of age
- Mostly chronic suffering piglets (Type C = acute)
- Fluid diarhea, Pasty yellow
- No blood in faeces
- Antibiotic resistant
- No commercial vaccin available

Parasitic Infektions

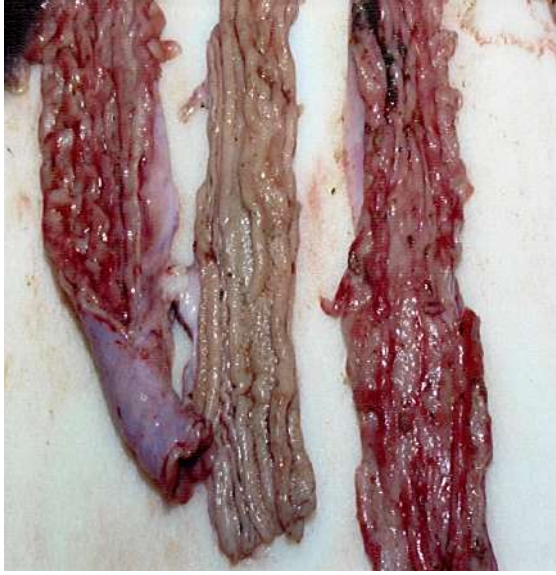
- Coccidiosis:
  - Isospora suis
  - 1 to 3 Weeks
  - Xxx in gut cells
  - Reiinfection by sow faeces/floors
  - grey scours
  - Hygiene
  - Therapy:
    - Toltrazuril preventive (preventive)
    - Hygiene (



Lawsonia

- Acute – PHE, Chronic - PIA
- Mostly fattening period, sometimes early infections after weaning.
- After weaning chronic type (combination with e.coli)
- Sow → piglet infection (rodents, mixing animals)
- Lac of uniformity, FC ↑, growth ↓
- Elisa, PCR or necropsy

therapy



- Mixing sow faeces
- Antibiotics
- Early vaccination
- Feed composition
- Cleaning desinfection

Other problems

- Streptoc suis (serotype 2,4, 7,9)
- Persistant Respiratory problems (combination, prrs/flu secundary bact infections like HPS and Bordeltella/ pasteurella) NPAR

NPAR: non progressive Atrofic Rhinitis

- Bordetella Bronchiseptica
- Secundairy inf. with Pasteurella multocida
- In normal circumstances non pathogenic

Other causes:

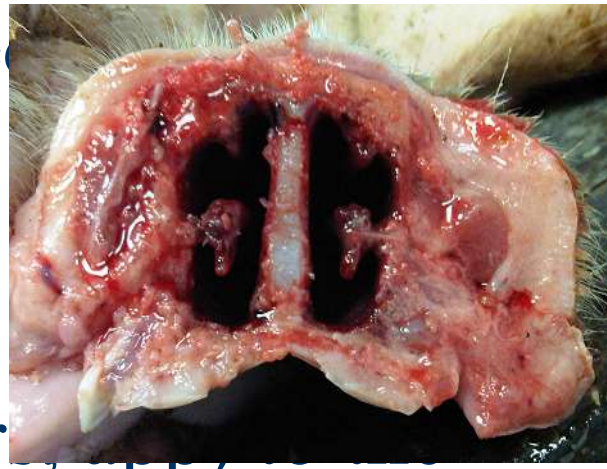
- Irritations → DUST, ammonia
- Other infections → PRRS, Glasser, Cytomegalovirus, Mycoplasma hyorhinnis
- Housing → high humidity

NPAR

- Toxines Bordetella bronchiseptica damages nose epithelium

- Stimulation of bone destruction (osteoclasten), inhibition of bone production (osteoblasten)

→ turbinates are deforme



• irreversible damage

• Open door for Pasteurella (and other
lungs

NPAR

- Sow Piglet contact
- Low maternal immunity
- Low Colostral supply
- Nose nose contact piglets/sow
- New animals
- Sec infections
- Management failures

NPAR: Symptoms

Clinical symptoms:	sneezing
	wet noses with exudate
	black tear stripes
Secundairy infections:	pneumonia
	pleuritis
	growth, uniformity↓
I.C.	Prrs
	Flu
	Myco Hyorhinis

Therapy

Management: all-in /all- out
colostral intake and production
crossfostering
ventilation, temp.

Vaccination sows: autologeous vaccin
inactivated B. bronchiseptica
Pasteurella toxine
? Effect ?

Antibiotics sec. infections

Vaccination sec.infections ; PRRS, Circo, FLU, HPS, Myco

Alternative therapy's

- Probiotic cleaning
- Phytogenic substances
- MCFA (lauric acid)
- Lianol
- Health management

Probiotics (exclusion)

- Floors Water Cleaning
- Foaming (enzyme)
- Desinfection
- Water cleaning
- Probiotica foam on the floors
- Cleaning drinking systems with probiotica
- Introduction cleaned animals
- Probiotica spray in the air during 1 week
- Efficacy; salmonella, e.coli, clostridium

Phytogenic substances

- Based on plant immunity
- Antibacterial activity against various pathogens
- Extract of green tea and pome granate (grazix)
- Only Support not curativ
- Price ???

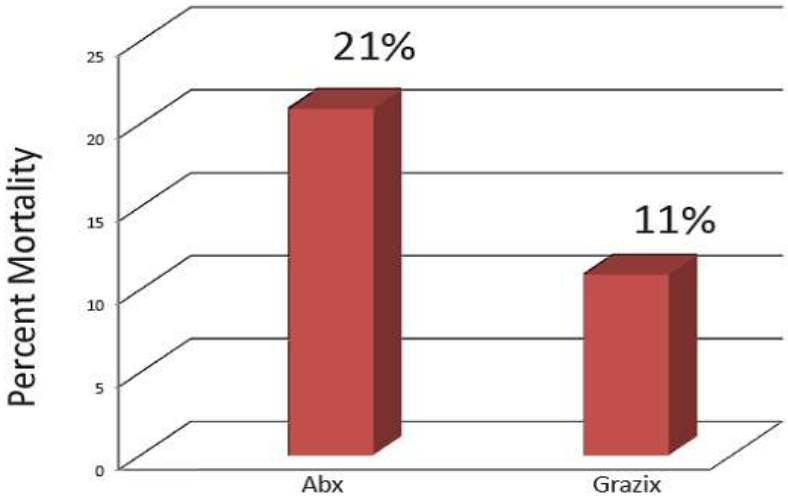
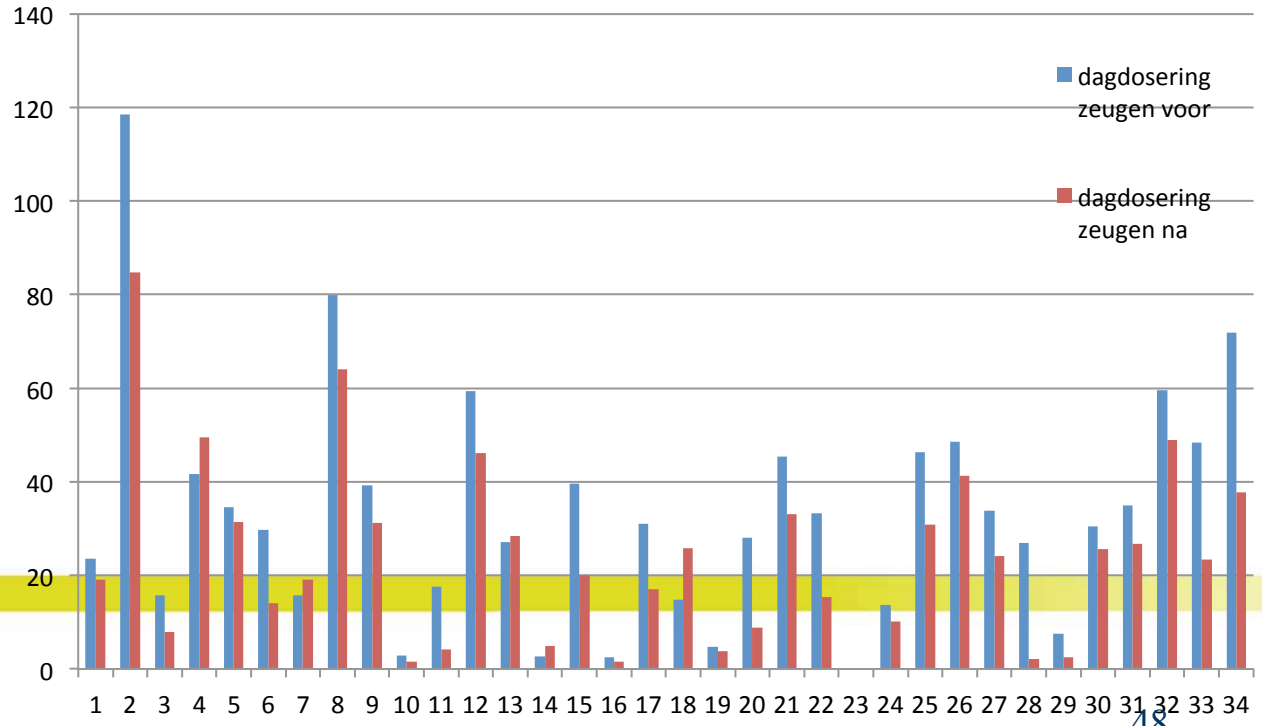


Figure 2. Percent mortality of piglets after administratio of either antibiotics (N=21,717) or Grazix feed supplement (N=22,028). P<0.0001

Lauric acid (C12)

- Antibacterial (streptococ)
- Sowfarms with lauricacid during pregnancy, lactation and nursery's (reduced ddd)



Lianol

- Fermented potato protein
- Source of pertides and aminoacids
- Acts as a prometabolic regulator
- Activates GH-R Gene expression
- IGF-1 (insuline growth factor 1)production is stimulated

Function

- Growth ↑↑ Stimulation cell proliferation (solapro)
- Milkproduction↑↑ cell proliferation
- Negative energy balance (nutrition, weaning low birthweight) low GHR and low IGF-1, stimulation with lianol
- Pig pump for piglets
- Feedmix for lactating sows and weaned piglets

Health management

- All in all out systems
- Batch systems (4-5 weeks)
- No mixing
- Control prrs, myco (SPF)
- No overcrowding
- Climate control (temp.)
- Cleaning drinkingwater systems
- Cleaning desinfection

What is the economical value of technical production losses for the farmer ?

Institute of Agricultural Economics of the Netherlands (LEI):

Production data	**Economical value per slaughtered pig !**	**Technical losses (minimum)**	**Economical value**	**Technical losses (maximum)**	**Economical value**
1 gram daily weight gain	0.027 €	17 gram	0.46 €	43 gram	1,16 €
0.01 FCR	0.15 €	0.2 FCR	1.50 €	0.3 FCR	4.5 €
1 % mortality	0.71 €	2,5 %	3,73 €	2 %	1,42 €
Total losses (without medicines and work			**2.56 € per slaughtered pig**	**-**	**7,08 € per slaughtered pig**

Barn climate control, management & hygiene are equally important

conclusions

- Reduction of antibiotics is a fact (independant of antibiotics)
- Alternatives are only supportive
- Improving farm/health management
- Colostral intake is highly important
- Enteric and respiratory diseasis are difficult to challenge
- Technical losses have a strong economical impact
- Higher health gives the producer return on investment and sustainable production

Your pigs feel better when protected

Thank You