Sows are often reported as very sensitive to zearalenone (ZEN), a mycotoxin with oestrogenic potential. It is recommended that ZEN should not exceed 0.25 mg/kg compound feed (88% DM) due to detrimental effects on fertility and reproduction. In 2018, the sugar beet pulp (SBP) harvest showed unusually high concentrations of ZEN and was unwittingly included as fibre source in sow feed. Thus, we posed the question whether modern sows are indeed as sensitive to ZEN as suggested by previous publications.

Our study was conducted over two lactations comprising 90 sows, equally distributed over three treatments: CON (control), ZEN1 (0.25 mg ZEN/kg feed), ZEN2 (0.50 mg ZEN/kg feed). Sows were fed the experimental diets from farrowing to following insemination (1st lactation) and subsequently a control diet until 18 days after second farrowing (2nd lactation, wash-out period). Sow's reproductive performance was assessed and alterations of tail, ear, feet, vulva/testis and teats in their piglets were scored. Furthermore, samples of diets, blood, urine and milk were collected during both lactations for analyses. Data were statistically analysed (PROC MIXED, Kruskal-Wallis-test) and difference deemed significant at $P < 0.05$.

Graded levels of ZEN in experimental diets were reflected in a dose–response of ZEN residues in sow's blood, urine and milk in 1st lactation, but were restored to base levels during the wash-out period of the 2nd lactation. Thus, we did not find evidence that ZEN, potentially stored in lipid depots of the sow, was released into milk during the catabolic state after farrowing. Sow's reproductive performance was not affected by dietary ZEN and piglets did not show alterations or signs of hyperoestrogenism such as swollen vulva/testis or teats.

Although graded levels of dietary ZEN were clearly detectable in biological matrices of sow, we did not find evidence that sow's reproductive performance and health of her offspring were compromised.

P194. Dietary indigestible protein increases post-weaning diarrhoea in piglets irrespective of sanitary housing conditions

Myrthe Gilbert [a,*], Lonneke Noorman [b], Bart van der Hee [a], Walter Gerrits [a]

[a] Wageningen University & Research, Wageningen, the Netherlands
[b] Utrecht University, Wageningen, the Netherlands

*Corresponding author: Myrthe Gilbert.
E-mail: myrthe.gilbert@wur.nl.

Protein fermentation has been associated with post-weaning diarrhoea (PWD) in piglets, which might be mediated by protein fermentation metabolites affecting the intestinal epithelium. Although a high protein diet reduces faecal consistency (Pieper et al., 2012), it does not always result in PWD (Htoo et al., 2007). Differences in environmental conditions, including microbial pressure, might underlie these contradictory results. Therefore, it was hypothesized that protein fermentation increases PWD, especially under low sanitary housing conditions. To study this, female weaned piglets (n = 160, divided over 5 batches) were fed a high (HiP) or low indigestible protein diet (LiP) and were housed under low (LSC) or high sanitary conditions (HSC) for 14 days. Faeces were collected daily and scored on consistency ranging from 1 (liquid faeces) to 5 (hard faeces). At day 8, half of the piglets were dissected for the collection of digesta and tissue from the proximal and distal colon. Effects of diet, sanitary conditions (SC), their interaction, batch, and batch-interactions were evaluated using the MIXED (continuous variables) or GLIMMIX procedure (Poisson distribution; faecal scores) of SAS. Faecal consistency was decreased by HiP ($P < 0.001$) from day 5–14 and by LSC ($P < 0.001$) from day 4–6 and 12–13, but factors did not interact (diet × SC, $P = 0.35$). Low SC increased the crypt depth in the proximal and distal colon (both $P < 0.001$), whereas the HiP diet decreased it in the distal colon ($P < 0.001$). Ammonia and BCFA, but also SCFA concentrations, were increased in the proximal and distal colon by HiP and LSC (all $P < 0.05$). Thus, the effects of HiP and LSC on crypt depth were in opposite direction, whereas their effects on metabolites were in the same direction. Overall, feeding a high indigestible protein diet increased PWD, irrespective of sanitary conditions, but it is unlikely due to the metabolites affecting intestinal morphology.

P195. Feeding antibacterial plant combinations to mitigate post-weaning diarrhoea in organic piglets challenged with enterotoxigenic Escherichia coli F18

Kevin Jerez-Bogota [a,*], Ole Højberg [b], Martin Jensen [a], Nuria Canibe [b]

[a] Aarhus University, Department of Food Science, Aarhus N, Denmark
[b] Aarhus University, Department of Animal Science, Tjele, Denmark

*Corresponding author: Kevin Jerez-Bogota.
E-mail: au698548@uni.au.dk.

Antibiotics and zinc oxide restrictions encourage the use of alternatives to combat intestinal pathogens like Enterotoxigenic Escherichia coli (ETEC), a major cause of post-weaning diarrhoea (PWD) in pigs. Previously, some plant combinations have shown synergistic antibacterial effects against ETEC. The goal here was to evaluate infection indicator dynamics and growth performance of ETEC-challenged weaned organic piglets fed diets supplemented with garlic (G) in combination with apple pomace (A) or black currants (B). For 21 days, 32 organic-weaned (7-weeks) piglets from ETEC-F18-homozygote sows were randomly assigned to one of four treatments: non-challenge, standard diet (Negative Control; NC); challenge, standard diet (Positive Control; PC); challenge, G + A (3% + 3%) supplementation (GA); challenge, G + B (3% + 3%) supplementation (GB). Challenged piglets were given 8 ml of ETEC-F18 (10^9 cfu/ml) on days 1 and 2 after weaning. Intake and BW were measured on days 0, 7, 14, and 21. To assess diarrhoea incidence, ETEC-F18 shedding, faecal dry matter (F-DM), and scores, faecal samples were collected daily the first week, and every other day thereafter. Data were analysed using PROC-GLIMMIX (SAS-9.4); treatment was a fixed effect, pen and sow were random effects. The PC piglets had lower ADG and Gain: Feed from day 1 to 7 than those on NC, GA, and GB ($P < 0.05$). During the study, NC piglets showed neither ETEC-F18-shedding nor signs of diarrhoea. The remaining treatment groups shed ETEC-F18 from day 2 to 9. From day 2 to 11, PC piglets had a higher incidence of diarrhoea and, from day 5 to 9, a lower F-DM than NC piglets ($P < 0.05$). The GA and GB piglets had a lower incidence of diarrhoea and faecal ETEC-F18 shedding and a higher F-DM than PC piglets on days 5, 7, and 9 ($P < 0.05$). The findings suggest that the tested plant combinations have potential to reduce PWD in organic and possibly conventional pigs.

P196. Maternal and/or direct supplementation with a casein hydrolysate and yeast β-glucan on post-weaning performance and intestinal health in the pig

Eadaoin Conway [a,*], John V. O'Doherty [a], Anindya Mukhopadhya [b], Alison Dowley [a], Stafford Vigors [a], Marion Ryan [b], Torres Sweeney [b]

[a] School of Agriculture and Food Science, University College Dublin, Belfield, Ireland
[b] School of Veterinary Medicine, University College Dublin, Belfield, Ireland

*Corresponding author: Eadaoin Conway.
E-mail: eadaoin.conway@ucdconnect.ie.

Identifying natural feed supplements and management strategies to alleviate the post-weaning growth check and intestinal dysfunction is of critical importance. Protecting bioactive properties of natural compounds in-vivo is an area of interest. Natural encapsulating and delivery agents