



SR Elite-weaner diet 2.0, as an alternative to medicinal doses of ZnO, in two different commercial pig herds.

Presentation of results from the project "SR-Elite-Weaner Diet 2.0"

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## Sammendrag

Denne rapport præsenterer resultaterne fra projektet "SR Elite Smågriseblanding 2.0". Projektet var et led i SvineRådgivningens arbejde med at finde alternativer til medicinsk zink til fravænnede grise. Brug af medicinsk zink til fravænnede grise blev forbudt i EU fra juni 2022.

SR Elite 2.0 er et koncept bestående af et koncentrat, der skal indgå med 40% i en hvedebaseret fravænningsblanding ledsaget af en syreblanding i drikkevandet. Blandingen blev sammensat med henblik på at opfylde næringsstof behovet til hovedparten af de fravænnede grise (fravænningsvægt på ca. 6 kg). Konceptet blev afprøvet i to forskellige danske besætninger.

Projektets formål var at teste effekten af SR Elite 2.0 konceptet på fravænningsdiarre. Da afprøvningen startede, var det standard at bruge en fravænningsblanding med medicinsk zink i begge besætninger. Disse fravænningsblandinger, som besætningerne brugte i forvejen, blev valgt som kontrol blandinger

På baggrund af de 2 afprøvninger, der er beskrevet i denne rapport, konkluderes det, at SR Elite 2.0 blandingen var en god alternativ fravænningsblanding for besætning 1. I denne besætning var diarré-udbrud og behov for medicinske behandlinger begrænset i de ugehold, der fik SR Elite 2.0 konceptet. I besætning 2 derimod var SR Elite 2.0 blandingen ikke nok til at holde diarré og dødelighed på et acceptabelt niveau og der var behov for betydeligt mere medicin. Hvad der er den præcise årsag til at den samme blanding fungerer så forskelligt i to besætninger er svært at konkludere på, men det er muligt at det hænger sammen med besætningernes sundhedsstatus.

## Summary

This report presents a study conducted as a part of the project "SR Elite Weaner Diet 2.0". The project was one of SRs approaches in finding good alternatives to use of medicinal zinc for weaned piglets. The use of medicinal zinc for weaned piglets was banned in EU from June 2022.

The SR Elite 2.0 diet was a concept consisting of a concentrate formulated to make up 40% of a wheat-based weaning diet accompanied with supplementation of an acid blend in the drinking water. The diet was formulated to primarily meet the requirements of the main part of the weaned piglets (weighing about 6 kg at weaning) and the concept was tested in two Danish commercial herds.

The aim of the project was to test the effect of SR Elite 2.0 on post weaning diarrhoea. When the trial started, the standard weaning diets in the test herds contained medicinal doses of zinc from ZnO. These standard diets were planned to be used as control diets in the trials.

On the background of the 2 trials described in this report, it is concluded that the SR Elite 2.0 diet was a good alternative weaning diet for herd 1. In this herd, diarrhoea outbreaks and the need for medical treatments were limited in the week batches that were given the SR Elite 2.0 concept.

In herd 2, on the other hand, the SR Elite 2.0 diet was not enough to keep diarrhoea and mortality at an acceptable level and significantly more medicine was needed. What exactly is the reason why the same mixture works so differently in two herds is difficult to conclude on, but it may be related to differences in health status.

## Introduction

This report presents a study conducted as part of the project “SR Elite weaner diet 2.0”. The project was a follow up on the project “SR Elite weaner diet 1.0” (Carlson et al., 2021). In the previous trial a diet was formulated for the smallest of the newly weaned piglet weighing about 4 kg at weaning. In the present study, the nutritionists at SR made a similar diet. However, this modified diet was formulated to primarily fulfil the requirements of the main part of the weaned piglets (weighing about 6 kg at weaning).

The project was financed by sponsorships from the suppliers of the feed stuffs and feed additives that were chosen to be included in the diets and from the producer of the concentrate. Consequently, the authors of this report wish to acknowledge the sponsorships from LCH Agro, Triple A, DSM, Kemin, Zinpro, Trouw Nutrition and Nutrimin. The project was one of SRs approaches in finding good alternatives to the use of medicinal zinc for weaned piglets. The use of medicinal zinc for weaned piglets was banned in EU from June 2022.

The SR-Elite 2.0 diet was tested in two commercial herds. In this report the SR Elite weaner diet 2.0 is referred to as SR Elite 2.0.

The aim of the project was to test the effect of SR Elite 2.0 on post weaning diarrhoea. When the trial started, the standard weaning diets in the test herds contained medicinal doses of zinc from ZnO. These standard diets were used as control diets in the trials.

In this report, the two herds and the result from each herd is described and discussed.

## Materials and Methods

### Animals

#### **Herd no 1:**

Herd no 1 is a conventional integrated production with 980 sows. The production runs weekly operation in the sow unit and piglets are weaned on Thursdays. The pigs are Danbred crossbred (Landrace/Yorkshire x Duroc).

The health status is Blue SPF and the piglets in trial were not given any vaccinations.

The trial was initiated on the 10<sup>th</sup> of March 2022

#### **Herd no 2:**

Herd no 2 is a conventional integrated production with 400 sows, which runs weekly operation in the sow unit and piglets are weaned on Wednesdays. The pigs are Danbred crossbred (Landrace/Yorkshire x Duroc).

The health status of the herd is Blue SPF + myc + Ap2 + Ap12. All piglets in the trial were vaccinated against PCV2, mycoplasma and Ap2 at weaning.

The trial was initiated on the 21<sup>st</sup> of April 2022

## Protocol

The two herds were planned to follow the same protocol.

Each trial included 10 week-batches (1 week-batch = piglets weaned in the same week)

The trials were divided in 5 blocks of 2-week batches and the two diets were allocated randomly on the two week-batches in each block.

Every day, during the first 2 weeks after weaning, the faeces in every pen was visually evaluated and it was registered if 0/3-, 1/3-, 2/3- or 3/3-part of the faeces on the floor in each pen was of diarrhoea consistency (liquid) (Appendix C).

The standard procedure was followed in respect of registration of any medical treatment (including date and treatment days) against diarrhoea and other infections.

## Diets

The test diet (SR Elite 2.0) was the same for both herds, however, the control diets differed between herds.

The SR Elite 2.0 diet was a pre-starter diet fed from the day of weaning in both herds. In herd no 1, the SR Elite 2.0 diet was fed for 7 to 13 days after weaning depending on piglet size. Large piglets shifted to the Starter-1 diet earlier than small piglets. In herd no 2, all piglets independent of size were fed the SR Elite 2.0 diet for 13 days after weaning, before they shifted to the starter-1 diet. The Control diets were the pre-starter diets that were already used in herd no 1 and herd no 2, respectively.

All diets were prepared on the farms as a mixture of concentrate, grain, and soy oil.

### **SR Elite 2.0 diet:**

The SR-Elite 2.0 diet was formulated by nutritionist at SR and the concentrate was produced by Nutrimin (Ans By, Denmark). The composition of the SR Elite 2.0 diet is presented in Table 1 in Appendix A and the detailed formulation of the SR-Elite 2.0 mixture is shown in Appendix B.

The SR-Elite 2.0 diet was formulated to contain wheat and soy oil from the herds and a concentrate produced by Nutrimin A/S. The concentrate provided heat-treated barley and wheat, 1.5 % insoluble fibers (Arbocel, LCH Agro), 10% milk powder, 9.4% AX3 Digest (Triple A) and no soybean meal. It was intended to keep a low acid binding capacity (ABC) by using AX3 Digest instead of fish meal and soybean meal and by using 0.5% calcium formate instead of limestone (CaCO<sub>3</sub>). In addition, the diet was supplemented with 0.5% benzoic acid (Vevovital, DSM) and 0.4% of FormaXOL (coated calcium formate and citric acid, Kemin).

The protein content was kept low (130 g digestible protein per FUp) and the amino acid content was increased, relative to the standard recommendations. Increasing the amino acid content has in a previous study revealed a positive effect on post weaning diarrhoea (Tybirk & Petersen, 2022). The lysine source used was lysin-chloride in-stead of lysine-sulphate to keep the sulphate level low (<1%) and chloride high.

Vitamins were dosed according to the OVN principles (DSM), and the supplemented iron and zinc was the organically bound ProPath® Fe (Zinpro) and ProPath® Zn (Zinpro), respectively.

Additionally, the total iron content was reduced compared with the standard recommendations. The diet also contained a probiotic source of Bacillus Subtilis (CLOSTAT XCL, Kemin).

Finally, all piglets in the SR Elite 2.0 group received 0,2 % of an acid blend (Selko pH E, Trouw Nutrition) in the drinking water.

#### **Control diet - Herd no 1:**

According to the protocol a standard weaning diet, based on wheat, concentrate (PrimeConc Mini Safe, DLG), soy oil supplied with medicinal doses of ZnO (Positive control) should be used as the control diet. However, after the first week-batch this herd decided to try this diet without medicinal doses of ZnO. Consequently, for this herd the results from the control group are divided in a positive control (Pos, 1 week batch) and a negative control (Neg, 4 week-batches). For 3 of the 4 week-batches that received the Neg diet, this herd decided to use Selko pH in the drinking water.

The concentrate supplied the Control diet with e.g., 10% of AX3 Digest, 1% potato protein, 10 % whey powder, 7% cake mix, benzoic acid, extra iron dosing, an organic zinc source etc.

#### **Control diet - Herd no 2:**

A standard weaning diet, based on wheat, concentrate (Safe Power, Nutrimin), fat and supplied with medicinal doses of ZnO.

In addition, the concentrate supplied the Control diet with e.g., 4% of porcine plasma, 10% milk powder, 3% fish meal, 2% potato protein, calcium formiate, vitamins after the OVN principles etc.

## Results and Comments

### **Herd no 1:**

The results from herd no 1 are presented in Table 1. The results indicate as expected that pigs in the Pos group needed fewer AB treatments compared with the control group without medicinal doses of ZnO (Neg). In the Pos group only 47 individual injections were given. In the Neg group all pigs received AB treatments in the drinking water at day 5-7 after weaning. In addition, on average 63 individual injections were given (mainly at day 3-9) per week batch. In comparison, the SR-Elite 2.0 group received on average 64 individual injection per week batch, but they did not receive any antibiotics (AB) in the drinking water. These data indicate that the SR Elite 2.0 diet is a promising diet in respect of reducing the use of AB in this herd.

The results on faeces score also indicate that the Pos group had less diarrhoea, since for 13.2 days out of 14 days there was no faeces with diarrhoea consistency on the slatted floor. In the remaining 0.8 days only about 1/3-part of the faeces was of diarrhoea consistency. In comparison, the Neg group had on average 10 days with no diarrhoea, 2.8 days where 1/3-part of the faeces was diarrhoea and 0.6 days where 2/3-part was diarrhoea and 0.6 days where all the faeces was diarrhoea. Days where more than 1/3 part of the faeces was diarrhoea were all registered on day 5-7, which also were the days were AB was given in the drinking water.

Table 1. Antibiotic treatments (group treatments in drinking water and individual injections) and faeces score measured as average number of days out of 14 days ( $\pm$  standard deviations) where diarrhoea amounted to 0/3-part, 1/3-part, 2/3-part, or 3/3-part of total faeces visible at the slatted floor.

	Pos <sup>1</sup>	Neg <sup>2</sup>	SR Elite 2.0
Weeks batches, N	1	4	5
Number of pens	12	48	60
<b>Antibiotic (AB) treatments:</b>			
Group treatments, no of week batches	0	4	0
Individual treatments, no of injections per week batch	47	63	64
<b>Faeces score:</b>			
0/3 of faeces was diarrhoea, days	13.2	10.1 ( $\pm$ 1.4)	12.0 ( $\pm$ 0.9)
1/3 of faeces was diarrhoea, days	0.8	2.8 ( $\pm$ 0.4)	2.0 ( $\pm$ 0.8)
2/3 of faeces was diarrhoea, days	0	0.6 ( $\pm$ 0.8)	0.1 ( $\pm$ 0.2)
3/3 of faeces was diarrhoea, days	0	0.6 ( $\pm$ 0.9)	0 ( $\pm$ 0.0)

<sup>1</sup>Pos: Control diet with medicinal ZnO, <sup>2</sup>Neg: Control diet without medicinal ZnO

Faeces score in the SR Elite 2.0 group seemed to be in between the two control groups. In this group there was no diarrhoea for 12 days out of 14 days. For 2 days there was about 1/3-part of the faeces that was of diarrhoea consistency and for 0.1 days 2/3-part of total faeces was of diarrhoea consistency. The signs of diarrhoea were primarily observed on day 4 to 7.

### **Herd no 2:**

The results from herd no 2 is presented in Table 2. In this herd there was, as planned, only one control group that was fed a standard diet with medicinal doses of ZnO.

The results show that the mortality was higher in the SR Elite 2.0 group compared with the Control group (3.0 vs 0.6 %, respectively).

AB treatments were also substantially increased in the SR Elite 2.0 group compared with the Control group. AB treatments in the drinking water increased from 0 pens out of 30 pens in the Control group to 12 pens out of 30 pens in the SR Elite 2.0 group. Group treatments were given primarily on day 3-6. Similarly, individual treatments (injections) increased from 141 in the Control group to 396 in the SR Elite 2.0. The individual treatments were primarily given between day 4 to 10 after weaning.

Table 2. Mortality, antibiotic treatments (group treatments in drinking water and individual treatments) and faeces score measured as average number of days out of 14 days ( $\pm$  standard deviations) where diarrhoea amounted to 0/3-part, 1/3-part, 2/3-part or 3/3-part of total faeces visible at the slatted floor.

	Control	SR Elite 2.0
Number of week batches	5	5
Number of pigs	1497	1493
Number of pens	30	30
Mortality, %	0.6	3.0
<b>Antibiotic (AB) treatments:</b>		
Group treatments, no of pens	0	12
Individual treatments, no of pigs	141	396
<b>Faeces score:</b>		
0/3 of faeces was diarrhoea, days	12.9 ( $\pm$ 0.8)	11.5 (1.8)
1/3 of faeces was diarrhoea, days	1.1 ( $\pm$ 0.8)	2.3 ( $\pm$ 1.5)
2/3 of faeces was diarrhoea, days	0.0 ( $\pm$ 0.0)	0.2 ( $\pm$ 0.3)
3/3 of faeces was diarrhoea, days	0.0 ( $\pm$ 0.0)	0.0 ( $\pm$ 0.0)

The faeces score data (Table 2) support that the diarrhoea frequency was higher in the SR Elite 2.0 group compared with the Control group. Out of the 14 days, where faeces score was registered, 12.9 and 11.5 days were without liquid faeces on the floor in the Control and SR Elite 2.0 group, respectively. One third of the faeces was liquid for 1.1 and 2.3 days in the Control and SR Elite 2.0 group, respectively. In the Control group, there were no days where 2/3 part or more of the total faeces was of diarrhoea consistency. In the SR Elite 2.0 group, there was 0.2 days where about 2/3 part of the faeces was liquid diarrhoea and no days where all faeces (3/3 part) was diarrhoea.

## Discussion and Conclusion

In herd no 1, it was clear that piglets in the Neg group performed less well in terms of post weaning diarrhoea compared with the Pos group, resulting in a much higher use of AB in the Neg group. However, when piglets were fed the SR Elite 2.0 diet, they performed only slightly poorer in terms of post weaning diarrhoea compared with the Pos group. When comparing with the Pos group it is, however, important to note that there was only one week batch in this group.

In herd no 2, the SR Elite 2.0 was compared with just one control diet (positive control). With the same number of replicates (5 week-batches) in each group, it is more appropriate to compare the results from these two groups. It is clear, that the SR Elite 2.0 group had a higher incidence of post weaning diarrhoea leading to a higher use of AB compared with the control group.

When comparing the results on faeces score from the two herds, it appears, that the number of days without liquid faeces on the floor was similar in the SR Elite groups (12.0 and 11.5 days, in herd no 1 and herd no 2, respectively). Likewise comparable results, when comparing the number of days where 1/3-, 2/3- and 3/3-part of the faeces was of liquid consistency in the SR Elite 2.0 groups from the two herds. Still, in herd no 2 more AB was needed, compared with the SR Elite 2.0 group in herd no 1.

In herd no 2 the mortality also increased substantially in the SR Elite 2.0 group compared with the Control group. Unfortunately, data on mortality in the individual groups are not available from herd no 1. However, according to the Manager of herd no 1, mortality was not negatively influenced by this diet.

It would have been of high value if it had been possible to include a positive and negative control group in both herds (with the same number of replicates) in this study. However, for different practical reasons, it was only possible to include two different diets in this trial. Consequently, it was chosen to use a positive control as this was the standard weaning diet in both herds when this project was initiated. The fact that herd no 1, chose to change their control diet to a negative control, allowed comparisons between a standard diet without medicinal doses of ZnO and the SR Elite 2.0 diet.

In addition, to the quantitative data presented in this report, the Managers of the two herds gave a qualitative evaluation based on their experience with the SR Elite 2.0 diet. The Manager of herd no 1 had only positive feedback on the diet and he would like to continue using this diet after the end of this trial. In contrast, but not surprising, the Manager of herd no 2, was less positive and he did not want to continue using the diet after the end of the trial.

The results, from this study clearly demonstrates, how differently the same diet can work in two different herds. The two herds were different in many aspects and one of these differences were the health status of the herd. Herd no 1 was blue SPF and consequently was less challenged compared with herd no 2 which had different diseases to cope with (myc+Ap2 + Ap12). These differences in health status may explain some of the differences in how well the diets was working in the two herds.

On the background of the trials described in this report, it is concluded that the SR Elite 2.0 diet was a good weaning diet in a herd with a good health status and worked well as an alternative to a standard weaning diet with medicinal doses of ZnO.

However, when more challenges are present in a herd (lower health status) a good weaning diet is not the only solution. Therefore, good management and hygiene is more important than ever since the ban of medicinal ZnO in June 2022.

## References

- Carlson, D., Nielsen, N.O., Callesen, J., Knudsen, B., Katholm, J.F., and Korneliussen, J. (2021). SR Elite-weaner diet as an alternative to high doses of ZnO for small piglets after weaning. Presentation of results from the project "SR Elite-Weaner-Diet". [https://svineraadgivning.dk/wp-content/uploads/2021/10/211015\\_Report-SR-EliteBlanding-1\\_final.pdf](https://svineraadgivning.dk/wp-content/uploads/2021/10/211015_Report-SR-EliteBlanding-1_final.pdf)
- Tybirk, P. and Petersen, T.S.B. (2022). Optimal fording af grise i vækst, Grisekongres 2022, Herning. <https://svineproduktion.dk/Services/-/media/0D29EEE410A449449F1D17BFBB215C03.ashx>

## Appendix A. Composition the SR Elite 2.0 diet

Table 1. Feed ingredients, energy, and ileal digestible protein in the SR Elite 2.0 diet

	%
<hr/>	
<u>From herd no 1 or herd no 2:</u>	
Wheat	57.1
Soy oil	2.9
<u>From concentrate produced by Nutrimin A/S:</u>	
Heat treated Barley flakes	6.0
Heat treated wheat	4.0
Milk powder	10.0
Soy protein concentrate (AX3 Digest, Triple A)	9.7
Potato protein	2.0
Lignocellulose, Arbocel (LCH Agro)	1.5
FormaXOL (Kemin)	0.4
Benzoic acid, Vevovital (DSM)	0.5
Calcium formate	0.5
Organic iron and zinc (Zinpro)	0.2
Vitamins, OVN (DSM), minerals, amino acids etc.	5.1
Bacillus subtilis, Clostat XCL dry (Kemin)	0.1
FUp per kg feed (calculated)	1.23
Ileal Digestible Protein (g/FUp) (calculated)	130
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# Appendix B. SR Elite 2.0 formulation



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Tlf / mobil 87500880 / 60259726

Recipe: 70151200-A SR-Eliteblandning 2 Ver. 21119			
Name	Svinerådgivningen	Phone/mobile	70151200 /
Address	Birk Centerpark 24, 7400 Herning	Email	svin@sraad.dk

Code	Name	Pct	Amount
020301-B	Wheat	56,800	56,800
0348-A	Soyaoil	3,200	3,200
600837-0L	SR EliteKoncentrat 40	40,000	40,000
		100,000	100,000

Nutrient	Per kg	Per energy	Nutrient	Per kg	Per energy		
----- Energy -----	0	0	- Micromineralns -	0	0		
Mass volume	kg/l	0,2246	0,1813	Fe - added	mg	61,81	49,87
Feed Units Pigs	FEsv	1,24	1,00	Fe, iron (II) -aminosyrechelate, 1	mg	61,81	49,87
Feed Units Sows	FEso	1,22	0,98	Cu - Added	mg	135,00	108,93
MJ metabolized energy pigs	MJ	13,42	10,83	Cu, copper (II) sulfate pentahydrate	mg	135,00	108,93
Dry Matter	%	88,98	88,98	Mn, added	mg	49,45	39,90
Crude protein	%	17,85	14,40	Mn, manganese (II) oxide	mg	49,45	39,90
Crude fat	%	7,37	5,95	Zn, added	mg	111,26	89,77
Crude ash	%	5,43	4,38	Zn, zinkaminosyrechelate, hydrate	mg	111,26	89,77
Fiber	%	3,50	2,83	I, added	mg	1,24	1,00
Oils and fats 1/0	Yes/No	0,004	0,003	I, calciumiodate, anhydrous	mg	1,24	1,00
Protein from potato protein	%	1,55	1,25	Se, added	mg	0,43	0,35
Protein from soya products	%	6,52	5,26	Se, sodium selenite	mg	0,43	0,35
Lactose	g	40,00	32,27	----- Vitamins -----		0	0
----- Amino Acids -----		0	0	A-vitamin - Added	1000	15,00	12,10
St. Dig. Protein	g	160,73	129,69	D3 - vitamin - Added	1000	0,00	0,00
St. Dig. Lysin	g	15,08	12,17	25-hydroxy-vitamin D3, 1000 i.e.	1000	2,00	1,61
St. Dig. Lysin in liq. feed	g	13,16	10,62	25-hydroxycholecalciferol	mg	0,05	0,04
St. Dig. Methionin	g	4,82	3,89	E-vitamin - Added	i.e.	200,00	161,37
St. Dig. Cystin	g	2,44	1,97	E-vitamin/dl-alfa-tokoferol	mg	182,00	146,85
St. Dig. Methionin + Cystin	g	7,26	5,86	K3-vitamin - Added	mg	9,00	7,26
St. Dig. Threonin	g	9,29	7,50	B1-vitamin/ Thiamin - Added	mg	4,50	3,63
St. Dig. Threonin in liq. feed	g	8,28	6,68	B2-vitamin/Riboflavin - Added	mg	12,50	10,09
St. Dig. Tryptofan	g	3,21	2,59	B6-vitamin/ Pyridoxin - Added	mg	7,00	5,65
St. Dig. Tryptofan in liq. feed	g	2,90	2,34	B12-vitamin - Added	mg	0,060	0,048
St. Dig. Valin	g	9,29	7,50	Niacin - Added	mg	70,00	56,48
St. dig. Valin in liquid feed	g	8,77	7,07	Biotin vitamin H - Added	mg	0,40	0,32
-- Macromineralns --		0	0	D-pantotenemic acid, added	mg	40,00	32,27
Calcium	g	6,18	4,99	Folic acid, added	mg	2,25	1,82
Phosphor	g	6,36	5,13	C-vitamin - Added	mg	225,00	181,55
Natphos (3.1.3.26)	FTU	1,400	1,130	Cholchlorid - Added	mg	650,00	524,47
Dig. Phosfor 0% fytase	g	3,66	2,95	----- Other -----		0	0
Dig. Phosfor 60% fytase	g	3,83	3,09	Benzosyre	mg	5,000	4,034
Dig. Phosfor 100% fytase	g	3,90	3,15	Calciumformiat	mg	5,437	4,387
Dig. Phosfor 150% fytase	g	3,91	3,16	Citronsyre	mg	7,00	5,65
Dig. Phosfor 200% fytase	g	4,00	3,23	Beta xylanase (3.2.1.8)	TXU	840	678
Ford. fosfor, 300 % fytase	g	4,06	3,27	Beta gluconase (3.2.1.4)	TGU	375	303
Ford. fosfor, 400 % fytase	g	4,08	3,29	Bacillus subtilis	mg	3,00	2,42
Sodium	g	2,95	2,38	Aroma	mg	1.000,00	806,87
Magnesium	g	0,68	0,55	S-NSP	g	23,58	19,03
Clorine	g	6,54	5,28	U-NSP	g	70,89	57,20



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Recipe: 600837-0L SR EliteKoncentrat 40			
Name	Svinerådgivningen	Phone/mobile	70151200 /
Address	Birk Centerpark 24, 7400 Herning	Email	svin@raad.dk

Code	Name	Pct	Amount
0045106	Barley, heat-treated flakes	15,000	15,000
0045009	Wheat, heat-treated	10,442	10,442
0070007	Milkpowder, fat-rich	25,000	25,000
0045507	Arboceel RC Fein	3,750	3,750
0035179	Sojaprot.konc. AX3 Digest	23,982	23,982
0035209	Potato protein concentrate	5,000	5,000
0010209	Monocalcium phosphate	3,799	3,799
0010309	Salt	1,385	1,385
0030109	Dustbinder	1,000	1,000
0055009	L-Lysine	2,421	2,421
0055108	DL-methionine	0,598	0,598
0055202	L-threonine	1,012	1,012
0055305	DL-Tryptophan	0,334	0,334
0055406	L-Valine	0,539	0,539
0050107	Calciumformiate	1,359	1,359
0050008	Benzoic acid	1,250	1,250
0050391	Forma XOL, Acid Blend	1,000	1,000
0025813	Clostat XCL Dry, Yeastculture	0,188	0,188
0075273	Aroma, Luctarom Advance	0,250	0,250
0015248	Iron Chelate of Amino Acid, Zimpro	0,103	0,103
0016028	Zink Chelate, of Amino Acids Zimpro	0,155	0,155
0015306	Copper sulfate	0,135	0,135
0015506	Manganese oxide	0,020	0,020
0016123	Calcium iodate	0,003	0,003
0016215	Selenium	0,011	0,011
0065230	Nanaphos E 50000 phytase	0,007	0,007
0066102	Natugrain TS, 5XG Enzymes	0,008	0,008
0021693	SR Eliteblandning, Premix	1,250	1,250
		100,000	100,000

Nutrient	Per kg	Per energy	Nutrient	Per kg	Per energy	
----- Energy -----	0	0	Magnesium	0,54	0,47	
Mass volume	kg/l	0,5616	0,4900	Chlorine	15,05	13,13
Feed Units Pigs	FEsv	1,1462	1,0000	Potassium	4,52	3,94
Feed Units Sows	FEso	1,1339	0,9892	Electrolyte balance	6,42	5,60
Dry Matter	%	93,79	93,79	- Micromineralstr -	0	0
Crude protein	%	30,57	26,67	Fe - added	154,52	134,81
Crude fat	%	7,49	6,53	Fe, iron (II) -aminosyrechelate, l	154,52	134,81
Crude ash	%	11,59	10,11	Cu - Added	337,50	294,45
Fiber	%	4,93	4,30	Mn, added	123,62	107,85
Protein from potato protein	%	3,87	3,38	Zn, added	278,14	242,67
Protein from soya products	%	16,31	14,23	Zn, zinkaminosyrechelate, hydrate	278,14	242,67
Starch	g	146,53	127,84	I, added	3,09	2,70
Lactose	g	100,00	87,25	Se, added	1,08	0,94
----- Amino Acids -----		0,00	0,00	Se, sodium selenite	1,08	0,94
St. Dig. Protein	g	282,64	246,59	----- Vitamins -----	0	0
Lysin	g	35,92	31,34	A-vitamin - Added	37,50	32,72
St. Dig. Lysin	g	34,52	30,12	25-hydroxy-vitamin D3, 1000 i	5,00	4,36
Methionin	g	10,55	9,21	E-vitamin - Added	500,00	436,23
St. Dig. Methionin	g	10,22	8,92	E-vitamin/dl-alfa-tokoferol	455,00	396,96
St. Dig. Methionin + Cystein	g	13,63	11,89	K3-vitamin - Added	22,50	19,63
Threonin	g	21,24	18,53	B1-vitamin/ Thiamin - Added	11,25	9,82

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Recipe: 600837-0L SR EliteKoncentrat 40

Name	Svinerådgivningen		Phone/ mobile	70151200 /		
Address	Birk Centerpark 24, 7400 Herning		Email	svin@sraad.dk		
Nutrient		Per kg	Per energy	Nutrient	Per kg	Per energy
St. Dig. Threonin	g	20,03	17,47	B2-vitamin/Riboflavin - Added	mg	31,25 27,26
Tryptofan	g	6,95	6,06	B6-vitamin/ Pyridoxin - Added	mg	17,50 15,27
St. Dig. Tryptofan	g	6,45	5,63	B12-vitamin - Added	mg	0,1500 0,1309
St. Dig. Isoleucin	g	11,91	10,39	Niacin - Added	mg	175,00 152,68
St. Dig. Leucin	g	21,09	18,40	Biotin vitamin H - Added	mg	1,00 0,87
St. dig. Histidin pigs	g	6,29	5,49	D-pantotenic acid, added	mg	100,00 87,25
St. dig. Fenylamin	g	12,96	11,31	Folinic acid, added	mg	5,63 4,91
Valin	g	19,80	17,28	Cholinchlorid - Added	mg	1.625,00 1.417,73
St. Dig. Valin	g	18,34	16,00	C-vitamin - Added	mg	562,50 490,75
-- Macrominerals --		0	0	----- Other -----		0 0
Calcium	g	14,97	13,06	Benzosyre	mg	12,500 10,906
Phosfor	g	12,07	10,53	Calciumformiat	mg	13,592 11,858
Dig. Fosfor 0% fytase	g	7,23	6,31	Citronsyre	mg	18 15
Dig. Fosfor 60% fytase	g	7,47	6,52	Beta xylanase (3.2.1.8)	TXU	2.100,00 1.832,15
Dig. Fosfor 100% fytase	g	7,57	6,60	Beta gluconase (3.2.1.4)	TGU	937,50 817,92
Dig. Fosfor 150% fytase	g	7,53	6,57	Bacillus subtilis	mg	7,50 6,54
Dig. Fosfor 200% fytase	g	7,71	6,73	Diatomaceous earth (E551c)	mg	932,50 813,56
Ford. fosfor, 300 % fytase	g	7,79	6,80	Clostat XCL Dry	mg	1.875,00 1.635,84
Ford. fosfor, 400 % fytase	g	7,83	6,83	Forma XOL	mg	10.000,00 8.724,50
Nanphos (3.1.3.26)	FTU	3.500,00	3.053,58	Aroma	mg	2.500,0 2.181,1
Sodium	g	7,24	6,32			



## Appendix C. Example of faeces scoring in one week batch (Herd 2)

SR Eliteblanding 2.0 Skema til registrering af om der er tegn på diarré i stien *308 grise*  
 Hold: 2 stald: 4 SR-Elite  eller kontrollfoder: \_\_\_\_\_  
 Andel af total gødning som er diarré – antager værdierne 0/3, 1/3, 2/3 eller 3/3 Evt. kommentar til gødningskonsistens mm. og  
 (svarer til: 0/3, 1/3, 2/3 eller 3/3 af stien) Notér når overgang til mix 2 starter.

Dag	Dato	Sti 1	Sti 2	Sti 3	Sti 4	Sti 5	Sti 6	Sti 7	Sti 8	Sti 9	Sti 10	Kommentarer
Dag 1	28/4	0/3	0/3	0/3	0/3	0/3	0/3					
Dag 2	29/4	0/3	0/3	0/3	0/3	0/3	0/3					
Dag 3	30/4	0/3	0/3	0/3	0/3	0/3	0/3					
Dag 4	1/5	1/3	1/3	1/3	1/3	0/3	0/3					
Dag 5	2/5	2/3	1/3	1/3	1/3	1/3	1/3					
Dag 6	3/5	2/3	1/3	1/3	1/3	1/3	1/3					
Dag 7	4/5	1/3	1/3	1/3	1/3	1/3	1/3					
Dag 8	5/5	1/3	0/3	0/3	0/3	0/3	0/3					
Dag 9	6/5	0/3	0/3	0/3	0/3	0/3	0/3					
Dag 10	7/5	0/3	0/3	0/3	0/3	0/3	0/3					
Dag 11	8/5	0/3	0/3	0/3	0/3	0/3	0/3					
Dag 12	9/5	0/3	0/3	0/3	0/3	0/3	0/3					
Dag 13	10/5	0/3	0/3	0/3	0/3	0/3	0/3					
Dag 14	11/5	0/3	0/3	0/3	0/3	0/3	0/3					Mix 2