

# A farm study - showing Health issues, Deformities, Abortions and Fertility problems in pigs linked to GM soya and Roundup.

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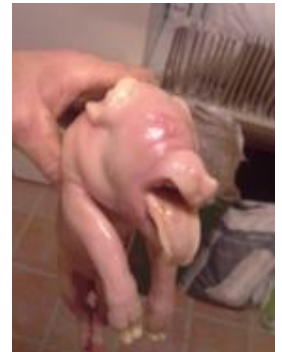


## Introduction:

I grew up on a farm and have been a conventional farmer all my life. I have had a farm with a herd of 450 sows selling the piglets on, at a weight of 30 kg for 20 years.

In 2011, I suspected that Genetically Modified (GM) soya was the cause of a number of problems that I had in my herd. I had noticed that each load of soya caused different health issues within the herd, especially with regard to diarrhoea and the sows' ability to nurse their piglets.

I became more uneasy about GM soya, when I began to read scientific papers, which linked GM soya to infertility, birth defects, weak offspring and internal organ damage. So I began to wonder if this was the cause of the problems I was seeing in my herd.



## Health effects after the Changeover to Non-GM soya:

My first course of action was to change the soya delivered, from GM soya to Non-GM soya (i.e. natural soya) as a result I saw remarkable differences. Diarrhoea in the herd disappeared, medicine usage fell to a third of the level prescribed when GM soya was being fed to the animals and at the same time, illnesses such as, stomach ulcers and bloat in the sows disappeared. This had been one of the main causes of death amongst sows when consuming GM feed time. A recorded number of 36 sows had died due to stomach issues in the last 2 years on GM soya. At least one died a month due to ulcers or bloat. Two sows died due to lack of appetite in the last year before the changeover. Another sow had kidney damage, both kidneys transformed to huge balloon-like structures; one was entirely transformed to a structure, containing about 50 litres of fluid, while the other kidney had started the same transformation, having a "balloon" on each end, containing about 0.5 and 2 litres respectively, and only about 5 cm of the kidney in the middle looked like a normal kidney. The sow was in good health, having just farrowed, and had just been in heat again. (See the picture of the Veterinarian dissecting the sow). Is this a one off? In some areas people are experiencing more kidney problems due to Roundup. This is the reason that Sri Lanka has prohibited the use of Roundup.



On Non-GM feed the sows became calmer and they produced more milk. Each sow, on average, weaned two extra piglets, meaning that each sow was able to look after two piglets more than before, so reducing the need for "nursing sows." We saw litter size increase, and fertility improve in times of "low" glyphosate levels in feed and Non-GM soya fed to the sows. We noticed that many old sows that had had 6 layers of piglets and that had never weaned more than 10 to 11 pigs per Litter, could suddenly wean 14 piglets, on Non-GMO soya. It is good, but not normal for sows to be most productive that late in life. In the weaning barn, health improved notably: the manure got drier; the faeces got more solid and we did not need to use medicine, just after changing to feed containing soya, (at this "change" to a diet containing soya, most

Medicine is used in weaners today at farms feeding GM soya). Efficiency went up and the overall economy of the herd improved.

Pictures of Pigs suffering from the same violent type of diarrhoea, that we had huge problems with when



feeding GM soya, up to 30% of piglets could die from one weeks farrowing's, when most severe. At the same time the whole farrowing house had health issues: many litters were affected by diarrhoea and most sows had not got milk enough, making it difficult to find healthy sows to use as spare mothers. The young sows and their litters were the most affected.

I had anticipated that the occurrence of deformed piglets would disappear, as research from 2011 had shown that Glyphosate (the active ingredient in Roundup) caused the same type of deformities as I had seen in my pigs, but this was not the case, as we continued to have deformities born within the herd.

Two years and 32,000 pigs later, after having tested the feed for levels of glyphosate present and having logged, photographed, filmed and frozen the deformed piglets, I can conclude that Glyphosate concentrations in the feed, as low as 0.1 grams / ton = 0.1ppm Glyphosate and up through levels of 0.2ppm – 1.1ppm and 2.2ppm had a linear increase in number of deformities born, 1/1871 – 1/1195 – 1/529 – 1/246 accordingly, when only looking at cranial, spinal and leg deformities of the piglets born in that period.

A number of pigs have also been born with deformities in soft tissues like ears, tongue, missing anus, kidney failure, open stomach without muscles or skin to protect it, missing areas of skin, missing or enlarged eyes, motoric handicaps, sex organs misplaced, abnormal or dual sex, mummified fosters with all types of deformities or tails with a kink in one vertebra.

The tail is of course a spinal deformity, but due to the fact that we had not logged this type deformity from the beginning of the observations, these were not included in the calculations. We also left out the soft tissue observations, due to the fact that they are sometimes hard to find. Some internal deformities are unable to be seen at a glance. Likewise, the mummified stillborn pigs, that were deformed were not logged either. Only fully grown fosters, live or stillborn were logged. These “difficult to find deformities” were not included in the study, so as not to cloud the picture.

Professor Monika Krüger of Leipzig University, who did the Glyphosate tests, was interested in the deformed piglets. So I took 38 frozen deformed piglets to Leipzig University to have them analysed. The result of this study can be found in the following link. <http://omicsonline.org/open-access/detection-of-glyphosate-in-malformed-piglets-2161-0525.1000230.pdf>

Knowing the levels of Glyphosate in the pig feed on a day to day basis, I looked at the pig data from the computer in the pig house and was able to go back and calculate the number of abortions in the given periods and to my horror I found that from 0.2ppm to the periods of 1.1 and 2.2 ppm combined, I saw a 500% increase in abortions!

From the same data, Professor Thomas Böhn from Norway calculated a significantly smaller number of piglets born after “High” compared to “low” levels of glyphosate in the pig feed. An increase in the rate of conception amongst the sows was also noticed, when low levels of Glyphosate was present in the feed.

During the course of this study I took tests of glyphosate in the feed, manure and urine from the same sows, on more than one occasion. From the tests we found that a fifth of the concentration in the feed was also present in the faeces and from 1% to 4% of the food concentration was present in the urine and similar levels were found to be present in the piglets dissected in Germany.

We also took samples of my urine and that of my herdsman.

My urine sample contained 2.58 ppb glyphosate and my herdsman's sample contained 0.74ppb glyphosate, indicating that if my metabolism was the same as the sows, I should have eaten food that contained an average of about 0.2ppm or 0.2 grams glyphosate per ton of food. This would put me in a position on the chart where there are higher risks of deformities born, fertility problems and possibly an increased risk of cancer and this concerns me greatly, as I eat normal food bought from the local shop.

I also took samples of milk from a local dairy farm. The farmer had cancer and we wanted to find out how much Glyphosate there was in his cows' milk. Tests results showed the level to be 1.7ppb = 0,0017gram / ton. This result is 17 times higher than the level used in a French rat study, where the rats were fed glyphosate in their drinking water. In this study 80% of the rats developed tumors compared to 20% in the non-treated group over a 700 day period.

Sadly, the farmer has since passed away, at the age of 49. His cancer started in the kidneys, two other neighbour farmers all who have fields adjacent to our fields have passed away due to Prostate cancer!

The summary of my findings is, without a doubt, that Roundup sprayed on crops is the direct reason for the increase in fertility problems, abortions and deformities in animals and as a farmer, knowing how nature works, I quite expect that people are already affected. Glyphosate is everywhere.

A farmer's task is to provide healthy, nutritious and abundant food for people. Genetically Modified Organisms (GMOs) or Glyphosate provide none of these!

## **Farm observations gain support from scientific studies:**

These farm observations, together with evidence from other research, peer reviewed farm research and even left out details from industry trials, plus observations in humans, strengthen the case.

In the introduction I described the main findings of my farm study, and I will now go into more depth and connect my findings to other studies.

My pig study was part of a Danish TV-documentary: <https://www.youtube.com/watch?v=2z0EgIaMMaQ>

This documentary resulted in the Danish Minister for Agriculture asking Aarhus University to find out if our observations (mine and those of a local egg producer) should be taken seriously. The answer from the Danish University is here:

[http://dca.au.dk/fileadmin/DJF/Notat\\_gmofoder\\_uk\\_version\\_Memorandum\\_on\\_The\\_feeding\\_of\\_genetically\\_modified\\_glyphosate\\_resistant\\_soy\\_products\\_to\\_livestock.pdf](http://dca.au.dk/fileadmin/DJF/Notat_gmofoder_uk_version_Memorandum_on_The_feeding_of_genetically_modified_glyphosate_resistant_soy_products_to_livestock.pdf)

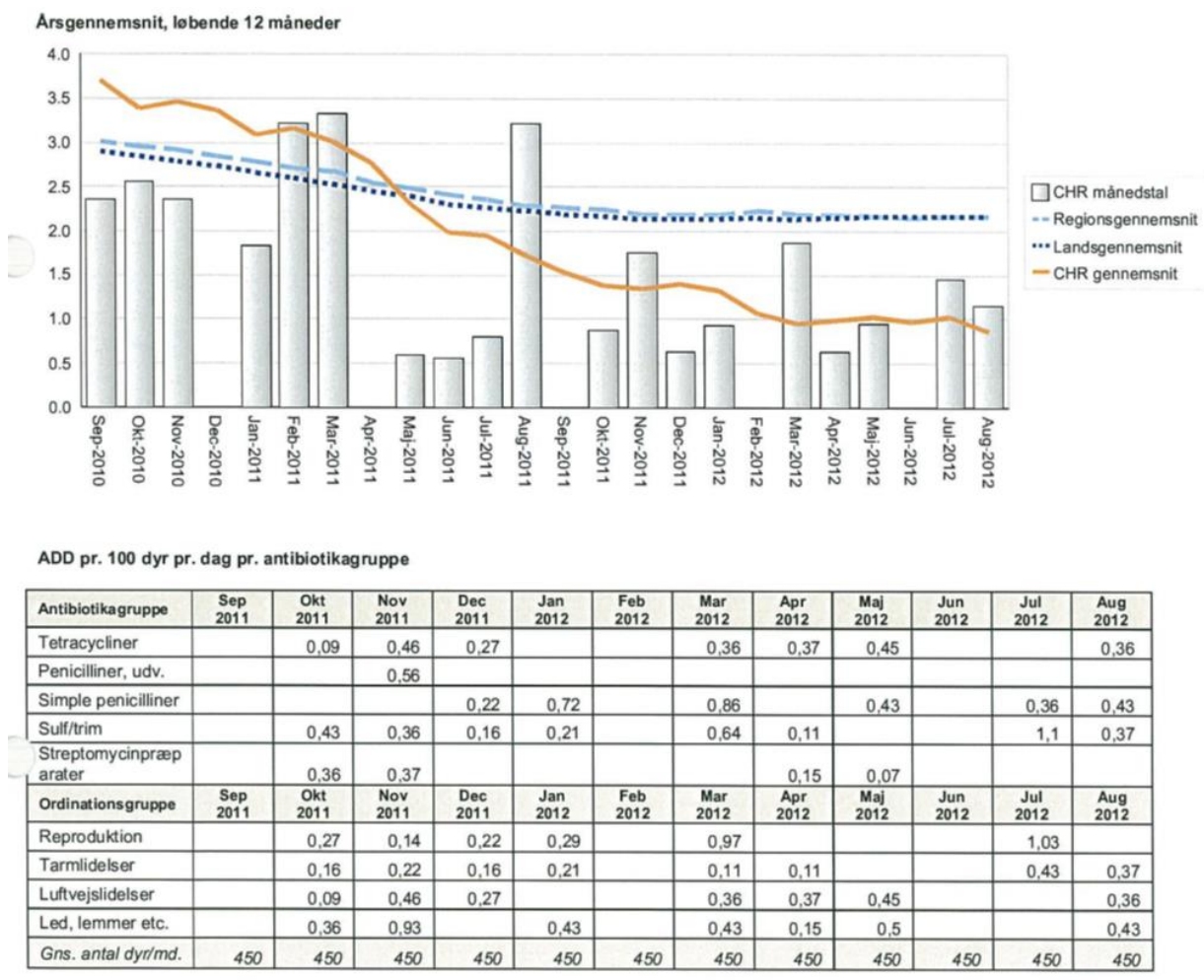
The university's memorandum supports our findings, stating that scientific literature was concurrent with the observations we had made and that Glyphosate in the feed:

***A. "Can affect the microbial populations (microbiota) in the animal gut, with secondary effects on animal production and health"***

***B. "Can affect animal mineral status, with secondary effects on animal production and health"***

My pig house observations show a dramatic improvement in the health of the herd, on changing to Non-GM soya. Records of all veterinarian prescriptions are kept by the State and these records are then used to produce the graph below. This graph shows the use of antibiotics in the herd, on a monthly basis. The changeover took place on 01-04-2011 and as the graph clearly shows our medicine usage promptly dropped by 66%. The reason for this drop in medicine usage was, because the sows were healthier, eating better and thus were more able to look after their piglets. This meant that medicine to treat mastitis and diarrhoea etc. in the piglets was no longer required.

The graph below shows my herd's accumulated medicine usage over a twelve month period compared to Danish and regional average usage. It also shows a clear drop from April 2011, when we changed to Non-GMO soya.



Veterinarian comments in her report, after she had seen the changeover effect on the herd's performance, are attached in **Appendix 1**.

Here is a translation of the comments to the farrowing house status after the changeover in English:

*“It goes really well for you to get sows to lie with many pigs. One has to take note of the fact that about May 1 onwards, the sows lie with 1-2 piglets more at the udder. This is believed in the herd to be in conformity with the time when you have switched to non-GMO feed. It is certainly undeniable that it looks like, (without having made statistics on it), but with the naked eye when you walk through the sows and check the sow cards the sows are lying with substantially more pigs than they did the last two lactations.”*

## Economy:

Due to the fact that the sows were healthier and could look after the piglets better, we observed improved production. The following calculations involve the sow herd, with piglets until weaning only.

1.8 more pigs were weaned per sow. (29.9 as opposed to 28.1 before)

Herd size 450 sows, calculated on sows and internal sale of 7 Kg piglets only.



#### Financial effect sows:

1. Better production results	= £ 33.000
2. 2/3 of medicine saved	= £ 3.550
3. Higher energy and protein in Non-GM soya and hence saving kg bought	= £ 1.300
4. Extra expenses Non-GM soya £ 90 / ton	= £ -6.750
5. In total a plus of £ 69 per Sow or	= £ <u>31.100</u> in total

The health and production benefits more than outweighed the cost of buying Non-GM soya.

## Deform born pigs:

In a period of two years and 8 months, we have photographed 128 deform born pigs.

The types of deformities are catalogued as follows:

Tails – 28, Spinal – 20, Cranial -16, feet – 16, Sex organ – 16, legs – 13, Ear – 9, kidney – 2, Skin – 2, missing anus – 2, Eye – 1, Thong – 1, Stomach born outside – 1, Motoric problems.

It should be noted that we like other farmers had got used to the “new norm” that of many deformed pigs being born and we only focused on skeletal damages in the start. We were aware that there would have been more pigs to photograph, if all the tail and soft tissue deformities had been collected from the start. However this catalogue of deformities gives an idea of what sort of deformities are most prevalent. Skeletal deformities make up 80 of the 128 deformities photographed, with the majority of deformities being to vertebrae and the cranium.

# Fertility + deformities:

## My findings:

Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6



Figure 7



Figure 8



Figure 9



Figure 10



Figure 11



Figure 12



Figure 13



Figure 14



Figure 15



Figure 16



Figure 17



Figure 18



Figure 19



Figure 20



Figure 21



Figure 22



Figure 23



Figure 24



Figure 25



Figure 26



Figure 27



Figure 28



Figure 29



Figure 30





Figure 31



Figure 32



Figure 33



Figure 34



Figure 35



Figure 36

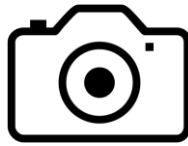


Figure 37

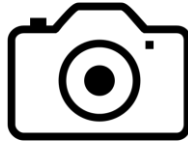


Figure 38



Figure 39



Figure 40



Figure 41



Figure 42



Figure 43



Figure 44



Figure 45



Figure 46

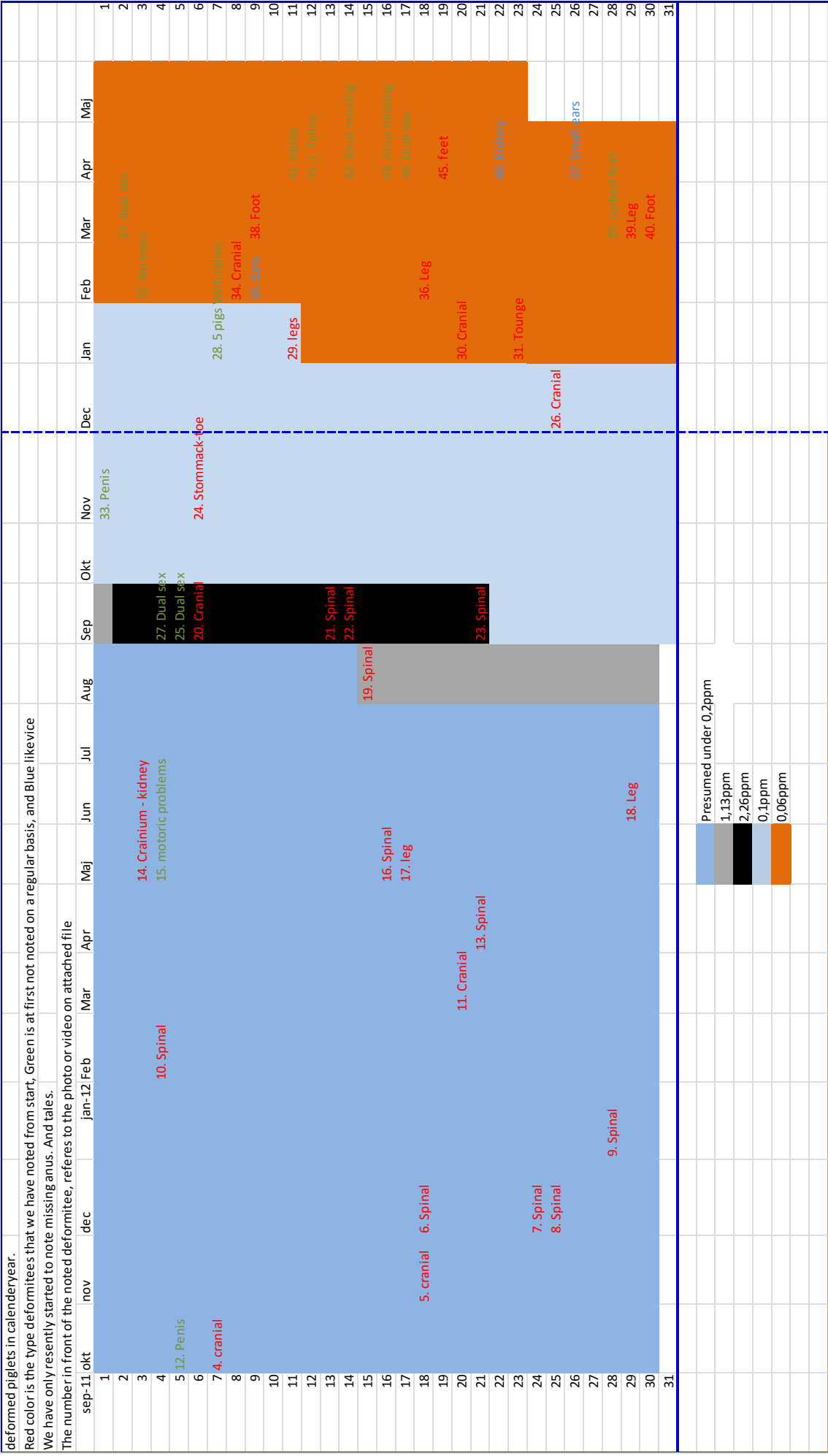


Figure 47



Link to all recorded deformed pigs, also those born after the study: [..\Dropbox\deformegriseindtil 0503-2014 stor udfolderingxlsx\(4\).xlsx](..\Dropbox\deformegriseindtil 0503-2014 stor udfolderingxlsx(4).xlsx)





Pregnant food					Glyp ppm in Ready mix		
	%	%	%	%			
	Grains in bin ppm-glyp	Wheat ppm	Barley ppm	Soya ppm	ppm		
before	0,17	53	<u>0,17</u>	35	0,57643	8,3	<b>0,20</b>
100612	0,17	53,4	2,835	35	0,57643	8,3	<b>1,13 High</b>
290712			2,835	76	0,57643	17,8	<b>2,26 High</b>
170812	0,00346	50	37,4	2,835	<u>1</u>	<u>9,4</u>	<b>0,10</b>
250912	0,00346	87,4			1,14967	9,4	<b>0,11</b>
251112	0,00346	87,7			1,14967	9,5	<b>0,11</b>
121212	0,00346	87,7			0,87643	9,5	<b>0,09</b>
200213	0,00346	87,7			0,5685	9,5	<b>0,06</b>
200413	0,00346	87,7			0,59655	9,5	<b>0,06</b>
							<b>0</b>
							<b>0</b>
							<b>0</b>
Lactating food							
	%	%	%	%			
	Grains in bin ppm-glyp	Wheat ppm	Barley ppm	Soya ppm	ppm		
10612	0,17	49,5	2,835	30	0,57643	14,6	<b>1,018809 High</b>
150712	0,17	40	0,31203	2,835	30	0,57643	14,6 <b>1,002659 High</b>
10812	0,00346	40	0	2,835	30	0,57643	14,6 <b>0,936043 High</b>
170812	0,00346	41,8	0	36,8	2,835	<u>1</u>	17,8 <b>0,179446</b>
20912	0,00346	50	0	26,8	2,835	<u>1</u>	17,8 <b>0,17973</b>
160912	0,00346	50	26,8	2,835	<u>1</u>	17,8	<b>0,17973</b>
260912	0,00346	76,8			1,14967	17,8	<b>0,207299</b>
201112	0,00346	77,5			1,14967	16,8	<b>0,195826</b>
31212	0,00346	77,5			1,14967	16	<b>0,186629</b>
121212	0,00346	77,5			0,87643	16	<b>0,14291</b>
270113	0,00346	76,5			0,87643	16,6	<b>0,148134</b>
10413	0,00346	76,5			0,59655	16,6	<b>0,101674</b>



#### Calculation;

If only looking at cranial, spinal and leg-deformations the skeletal deformitees. And look 35 days later than the feed of different levels of Glyphosate has been fed.

One gets to this picture;

Glyphosate level in feed			Number of skeletal deformitees	Pigs born for every	Total born	
	Until		In Period	one born deform	In period	
01-10-2011	15-07-2012	unknown presumed about 0,2ppm	<b>13</b>	1 for even	<b>1195</b>	15531
16-07-2012	02-09-2012	<b>1,13</b> ppm	<b>1</b>	1 for even	<b>529</b>	529
13-09-2012	21-09-2012	<b>2,26</b> ppm	<b>4</b>	1 for even	<b>246</b>	984
22-09-2012	16-01-2013	<b>0,11</b> ppm	<b>3</b>	1 for even	<b>1871</b>	5613
17-01-2013	23-05-2013	<b>0,08</b> ppm	<b>4</b>	1 for even	<b>1398</b>	5591
						28248

My conclusion:

25

The calculations are only made on skeletal deformitees, as that is the one category that we have matikulary kataloged from 01-05-2011.

There is more pigs born deform with higher levels of Glyphosate in the feed. The only deviating period is from 22-09-12 until 16-01-2013, wich has been a remarkable quiet period, regarding skeletal deformitees. Please note that only one pig makes the whole chart non liniar in all cases.

however this does not change the fact that in the periods where feed has had higher than 1ppm glyphosate in the feed 35 days before farrowing, the Sows has had far more born deform, than with only near 0,1ppm Glyphosate 35 days before farrowing  
4,4 times higher numbers of deformed piglets in the time of over 1 ppm to under 0,2ppm is wery significant!

If I add up periods where glyphosate levels are higher than 1ppm 35 days before farrowing and compare to all the periods average under 0,2ppm

This is the calculation;

Over 1ppm =	5	1 for even	<b>303</b>	1513
Under 0,2ppm =	20	1 for even	<b>1337</b>	26735

This calculation is done on 28248 born pigs, in a period of nearly 19 months.

**Number of total born pigs in the period of high Glyphosate levels in the feed compared to low.**

The pig program analyse says:

	Live born	still born	Total Born / litter	Glyphosate
01-10-11 until 15-07-12	15,1	1,6	16,7	under 0,2ppm
16-07-12 until 13-09-12	14,5	1,5	15,9	1,13 and 2,26ppm 35 days prior to farrowing
130912 until 21-04-13	15,3	1,7	17	0,1ppm

However there is an other interesting thing, the sows in the middle group, has all got less farrowed in the first 5 litters, it looks like the older sows can handle the glyphosate better!

Total born												All	%first layer sows
	1. liter	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th		
01-10-11 until 15-07-12	14,5	16,6	17,6	18,2	18	17,1	16,2	16,9	15,8	20,3	19	16,7	23
16-07-12 until 13-09-12	12,6	14,7	16,8	17,5	15,9	17,3	16,8	16	19	17	15,9	19	19
130912 until 21-04-13	14,6	16,4	17,8	18,8	17,9	18,2	17,6	17,8	18,6	15,5	22,5	17	22,5

Note that the change from 16,7 to 17 pigs total born is in line with the Average danish production improvements in the period, of about 0,5 pigs pr. year So it is a herd in balance

It is really interesting to go back in data to analyse. I am sure that a good deal of the explanation to the fewer pigs born has to do with many of the fosters have got fatal deformitees, as you can see on the photoes, we have only later got to photoe pigs with bent tales, and there is a lot of them.

I believe that the deformitees is even spread all over the spine, the reason there is more born with deform tales is that a bent taile is not fatal, but the same kink in the spline in the neck or where the ribs are is likely to be fatal, I dont believe any of my pigs are born with deformitees before halfway down the spline. Monika would know by now.

Rughly you can say that for every pig born deform, with skeletal deformitee there is ;

16-07-12 until 21-09-12 Glyphosate over 1ppm 35 days prior to farrowing the sows had 0,8 less born, live or stillborn  
 147 farrowings in this period makes the loss 118 fosters  
 5 pigs with Skeletal deformitees makes that for every one born with deformitees 23 pigs are not born  
 This makes a good explanation to why Amerikan people can not hold there pregnancies, my sows had from 15-44 ppb Glyphosate in urine. in the "high" period, less than some urbanites in USA.



**Irregular re-insiminations in perodes;**

irregular defined by +- 1day from 21 days per cyclus: outside 19-23 Days, 38-46days, 57-69 Days, 76-92 Days, 95-114 days.

split by first week and last week of Many irregular insiminations:

Weeks	Irregular re-insiminations		IR. Ins. Pr week	Days between insiminations
	1st	2nd		
02-04-12 until 08-07-12	14	2	0,1428571	94, 37,
09-07-12 until 03-09-12	8	8	1	29, 71, 28, 52, 73, 47, 32, 25
04-09-12 until 01-04-13	30	9	0,3	53, 47, 32, 70, 50, 49, 47, 28, 27,

Many of these insiminations are on sows later than normally allowed, but all on sows in otherways good condition

Average is 0,36 irregular reinsiminations pr. week. In all the period

There has in the period just after high Glyphosate level in the feed been 3 times more than normal irregular reinsiminations, =

5 sows to many, on top of that other sows has been slaughtered after not tested pregnant. But that is not possible to add up

If one add up the losses only on the 5 sows 15,8 \* 5 = 79 pigs is lost alone due to abortions in the period

The losses after buying 33 ton of Barley vith 2,8ppm Glyphosate and feeding it is horrendus;

Fewer pigs born pr. litter 118 Fosters

Pregnancies lost in the period 79 Fosters

Losses in all 197 Fosters

One could compare this loss with how many pigs born With spinal, cranial or leg deformations.

5 piglets born With Skeletal deformitees and 197 lost Fosters makes that 1 deform = 39 pigs not born!

and of them 91 % would have been born alive! = 35 live pigs lost. Pr. one born deform.

The financial side is grim. 33 ton og sprayed down barley has made a net produktion loss off near 32000 kr.

In other terms you would be better off paying 100 Kr / 100 kg more for non sprayed down barley. Let alone the health issue in animals and humans.



Calculation on wether litters are more likely to be smaller in periods with high concentrations of Glyphosate in feed

In this Calculation is looked at the same period as deformitees has been noticed at a higher rate, 75 days after feeding High levels of glyphosate. The period is from 20-08-12 until 22-10-12.

All sows are listed up from 010412 until 010413, after following criterias;

1. the sows with farrowings under 10 liveborn
2. the Sows with under 10 liveborn and with max 1 still born ( to make sure farrowingproblems don't cloud the picture)

Sow	Live born	Still born	Date	Farrowings in the period 01-04-12 until 01-04-13 ( period from 20-08-12 until 22-10-12 exenpt)
3329	1	12	13 03-04-2012	( period from 20-08-12 until 22-10-12 exenpt)
3622	5	1	6 14-04-2012	With under 10 born live has in average
3837	6	10	16 14-04-2012	8,4 fully developed fostres
3627	6	1	7 18-04-2012	
3821	7	4	11 19-04-2012	Farrowings in theperiod from 20-08-12 until 22-10-12
3670	7	7	14 22-04-2012	With under 10 born live has in average
3140	9	10	19 24-04-2012	7,5 fully developed fostres
3895	8	0	8 24-04-2012	
3372	8	7	15 15-05-2012	Wich is 0,9 less fosters born
3816	9	0	9 16-05-2012	
3939	5	0	5 16-05-2012	
3965	5	3	8 25-05-2012	The same calculation after 2.nd criteria:
3755	1	1	2 06-01-2012	Farrowings in the period 01-04-12 until 01-04-13
3374	8	0	8 05-06-2012	With under 10 born and max 1 still born live has in average
3657	9	12	21 09-06-2012	( period from 20-08-12 until 22-10-12 exenpt)
3838	3	10	13 03-10-2012	6,9 fully developed fostres
3143	9	8	17 15-07-2012	
4022	8	2	10 15-07-2012	Farrowings in theperiod from 20-08-12 until 22-10-12
4027	8	0	8 21-07-2012	With under 10 born live has in average
4031	9	0	9 21-07-2012	With under 10 born and max 1 still born live has in average
4055	5	0	5 21-07-2012	5,6 fully developed fostres
3527	8	0	8 24-07-2012	
4068	8	1	9 25-07-2012	Wich is 1,3 less fosters born
3969	9	0	9 28-07-2012	
4052	8	0	8 28-07-2012	Conclusion;
3660	9	10	19 03-08-2012	This indicates that not only is there more pigs born deform,
4043	4	0	4 03-08-2012	but there is more liters with very few fosters, indicating that
4045	9	1	10 03-08-2012	fosters have had fatal fosterdamage as well, and they are not counted
3551	9	0	9 09-08-2012	at birth, as we don't count fossiliced fosters.
3701	7	3	10 18-08-2012	
3834	9	0	9 18-08-2012	0,9 - 1,3 pigs lost is many when you add up the farrowings
3974	2	11	13 19-08-2012	
3429	8	0	8 30-08-2012	It is hormones from live pigs that keeps a pregnancy running,
3535	5	0	5 01-09-2012	a sow will abort all remaining fosters, to start again, if there is under
3768	9	9	12 06-09-2012	3-5 live fosters giving of hormones.
3882	3	0	3 08-09-2012	That mecanism indicates with my findings, that lost pregnancies
3952	9	9	12 09-09-2012	also should be expected.
4008	4	0	4 21-09-2012	
4065	6	1	7 22-09-2012	
3948	3	0	3 24-09-2012	
3912	9	0	9 27-09-2012	
3815	9	3	12 23-10-2012	
3610	9	6	15 03-11-2012	
4006	0	12	12 12-11-2012	
3934	3	6	9 15-11-2012	
4092	3	12	15 19-11-2012	
3995	3	0	3 20-11-2012	
3888	5	16	21 24-11-2012	
4017	7	0	7 25-11-2012	
4127	8	0	8 02-12-2012	
3146	9	3	12 08-12-2012	
4132	9	1	10 09-12-2012	
4124	9	1	10 14-12-2012	
4137	4	0	4 18-12-2012	
4167	8	0	8 20-12-2012	
4047	7	0	7 16-01-2013	
4157	3	0	3 16-01-2013	
3758	3	1	4 17-01-2013	
4152	1	0	1 18-01-2013	
3527	6	0	6 24-01-2013	
3612	8	12	20 27-01-2013	
3317	7	0	7 08-02-2013	
3054	9	1	10 12-02-2013	
4155	5	0	5 23-02-2013	
4135	6	6	12 27-02-2013	
4080	9	0	9 17-03-2013	
4012	9	8	17 18-03-2013	
4202	7	0	7 22-03-2013	
4151	8	0	8 30-03-2013	

The total born piglets pr. litter in the monthly periods.

	jan	feb	mar	apr	maj	jun	jul	aug	sep	okt	nov	dec
2011	16,4	18	<u>15,2</u>	17,2	16,1	17,1	16,9	16,4	16,2	16,6	<u>15,9</u>	16,2
2012	16,9	17,9	17,3	16,5	16,5	16,5	<u>15,8</u>	16,5	16,4	16,6	16,9	16,3

The 3 highlighted months low figures can be explained by:

March 2011 is before we changed to NON-GMO soy, the soy used could have been high in Glyphosate, no tests have been done.

And 44% farrowed first layer in period

Nov 2011 before harvest 2011 grains have been bought in from merchant, glyphosate could be a factor, no tests has been done, and 38% farrowed first time in period

Jun 2012 has been about one month after starting feed with a glyphosate level of +1ppm there is no other obvious explanation, as only 17% of the farrowings were first layers, average in the farm is 22,5% first layers

Thomas Böhn from Trondheim University in Norway helped to make these graphs.

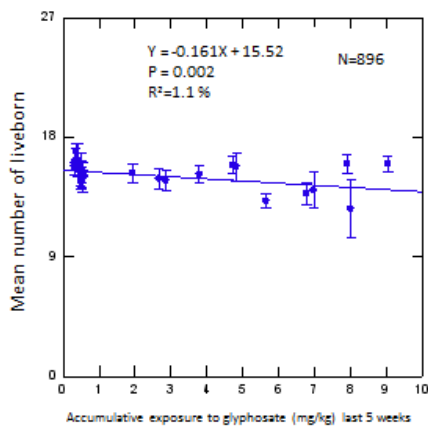
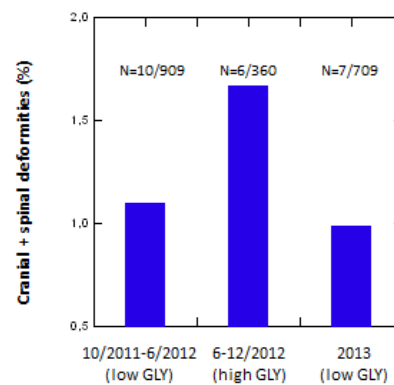
The pig computer program data and the deformed pig data, together with the glyphosate feed tests are the basis for the graphs.

The first graph shows periods of at least 6 months for each column and it clearly shows a higher number of deformities born, correlating with the increase of Glyphosate contamination in the feed

The 1<sup>st</sup> column: 0.2 ppm Glyphosate in the feed.

The 2<sup>nd</sup> column: 0.6ppm Glyphosate in the feed.

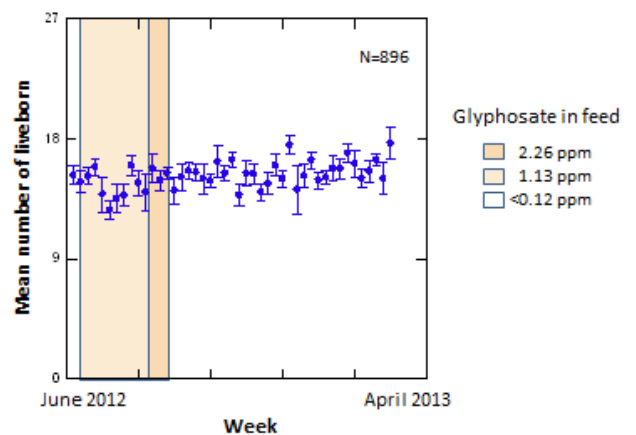
The 3<sup>rd</sup> column: 0.1ppm.

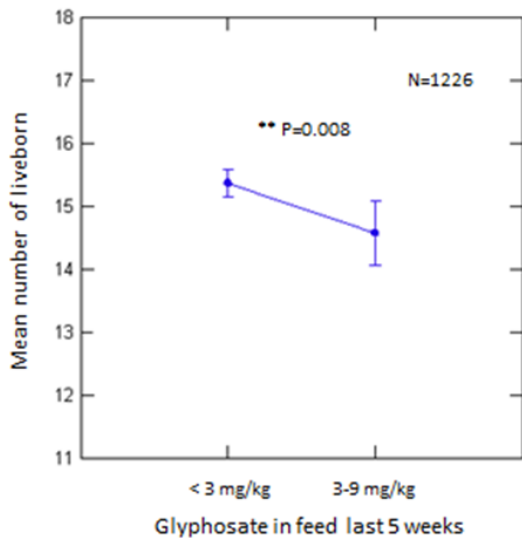


The second graph shows a 5 week accumulated dosage of glyphosate in the feed, compared to live born.

Conclusion: More Glyphosate = Fewer live born.

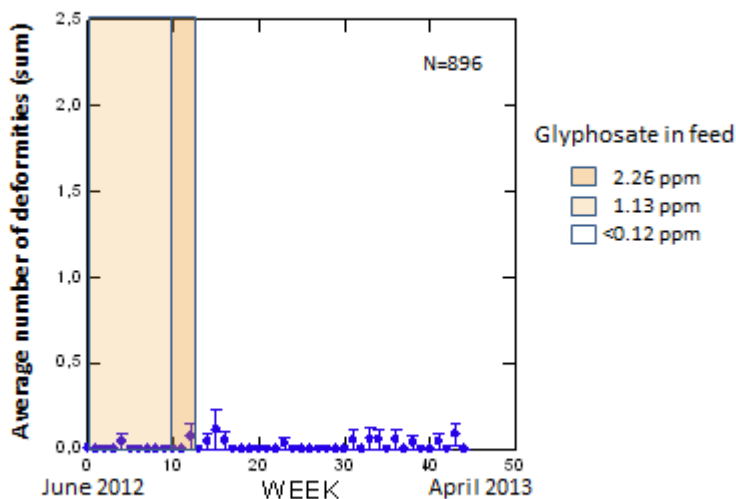
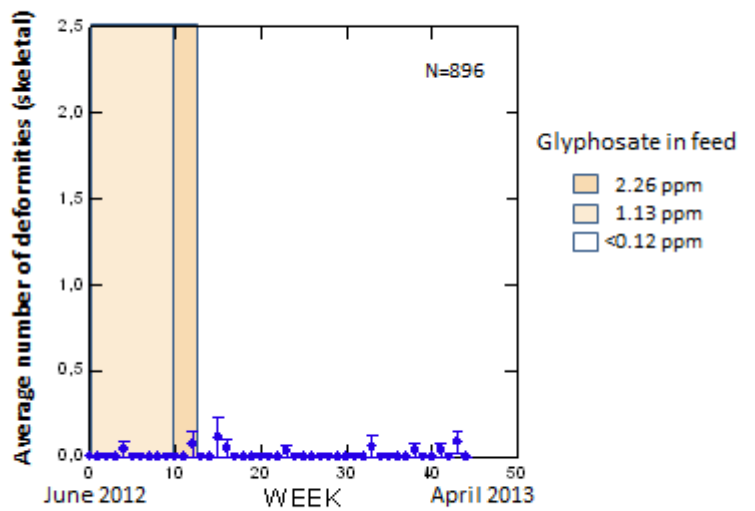
The third graph shows ppm Glyphosate in the feed compared to live born





The fourth graph shows that there is a statistically significant fewer pigs born when accumulated glyphosate exposure is higher.

The fifth graph shows the average number of deformities (skeletal) in relation to periods of different levels of Glyphosate in the feed.



The sixth graph shows all the deformities observed in the herd, compared to levels of Glyphosate in the feed.

Please note that in the second half of 2012 a routine of logging all the deformed tails got put in place, before that time tails were not routinely logged, as we are no different than other farmers and had got accustomed to seeing deformed tails. Also, as a deformed tail is never a fatal injury, it was not always logged in the start.



Prof Dr Monika Krüger from Leipzig University found from a case study of the deformed piglets that Glyphosate was present in all organs measured, in the deformed pigs. <http://omicsonline.org/open-access/detection-of-glyphosate-in-malformed-piglets-2161-0525.1000230.pdf>

The important findings of this study are:

1. The study is on big mammals, which are very similar to humans.
2. Glyphosate was found in all tested organs, at human relevant exposure levels.
3. Glyphosate levels found in the tested piglets meat and organs were similar to the urine samples from the sow herd – not the exact same sows.
4. The types of deformities are typical to what has been found in other studies where Glyphosate has been tested for, and it is scientifically known that Glyphosate causes deformities! <http://earthopensource.org/earth-open-source-reports/roundup-and-birth-defects-is-the-public-being-kept-in-the-dark/>
5. Most of the mother sows were getting fed a diet of less than 0.2ppm Glyphosate prior to giving birth – a dosage that is low compared to people in places where GM food is used for humans. My sows had Glyphosate tests done of their urine and at a time of a sow getting fed 0.2ppm Glyphosate in the feed, a level of 2.8ppb Glyphosate was found in the urine! (This is enough to be up the scale regarding deformities born, and fertility problems!) According to Glyphosate tests from EU parliamentarians, showing an average of 1.7ppb in their urine and the deformed pigs showing from 0.15 to 80 ppb in their organs, we as a population in Europe are already receiving ample Glyphosate in our food and thus it is fair to assume that we have already got similar effects in our population!

**As a farmer, I will make conclude that we humans are already aborting in huge numbers, here in Europe, because of deformities caused by the use of Roundup and that the numbers of deformities aborted or born deformed due to Roundup is likely to be much higher in the Americas.**

**Please note:** Avila-Vazquez Medardo Physician Pediatrician and Neonatologist Faculty of Medical Sciences, National University of Cordoba has seen even higher ratios of deformed humans than I have seen in my pigs, correlating with the exposure levels, my pigs had at low levels of glyphosate in their feed. Argentinian population in the effected villages have likely got higher quantities of Glyphosate in their feed, it being GM maize and soya, and they also have got more contamination from the air, as areal spraying is used.

**先天性异常**  
CONGENITAL ANOMALIES

在图库曼的喷洒区，产前诊断越来越多  
Increased prenatal diagnosis in sprayed areas in Tucuman

在波萨达斯的米西奥内斯医院，神经管缺陷发病率很高  
High rate of neural tube defects at the Posadas, Misiones Hospital

Páramo医生：在圣达菲在马拉夫里戈，200个新生儿中有12个先天畸形  
Dr. Páramo: 12 birth defects out of 200 births in Malabngo, Sta Fé



**在雷西斯滕西亚，先天畸形的新生儿数量不断增加**  
Increased congenital birth defects: Chaco

Year 年份	Cases registered by year 记录的案例	Births 出生人数
1997	46 defects	24030
2001	60 defects	21339
2008	186 defects	21.808



新生儿学服务医院, J.C. Perrando Neonatal Unit, Hospital J.C. Perrando.  
水污染委员会的报告, Otaño医生, 2010年 Report from Water Contaminants Commission, Dra. Otaño 2010

This work from 2012 describes the same deformities as seen in my pigs, showing a large number of studies, where Glyphosate is tested!

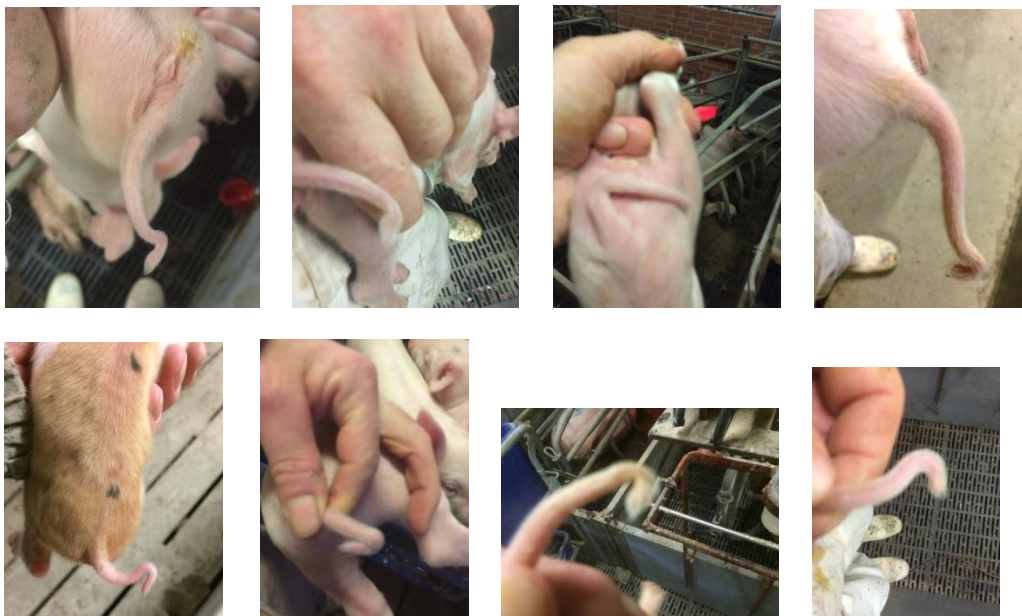
<http://www.omicsonline.org/teratogenic-effects-of-glyphosate-based-herbicides-divergence-of-regulatory-decisions-from-scientific-evidence-2161-0525.S4-006.php?aid=7453>

Evidence of deformities gathered while I have been working as a relief worker in 2015 and 2016 in Denmark

**Farm 1** - In all 19 pigs born deformed, observed over about 30 days of December-January 2016, about 2000 pigs born in the period, and I did not see all the deformed pigs, as I did not have the farrowing house duty, and the peoples in the farrowing house did not recognise all deformities, or did not know they should be gathered, and not all deform pigs were photographed. The feed was processed in the farms mill room, but GM soya, and grains from the feed merchant; and there were no records as to whether or not it had been sprayed with Roundup. Deform pigs are likely to have been exceeding 1% of born piglets!

The following deformities were observed:

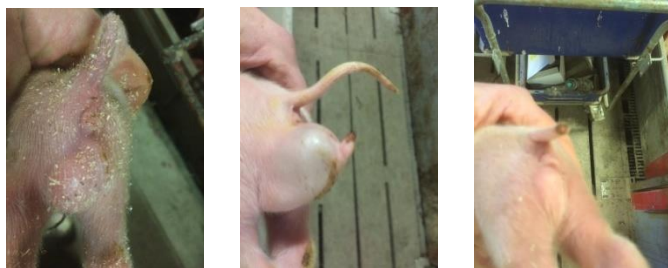
8 x Tail Deformities:



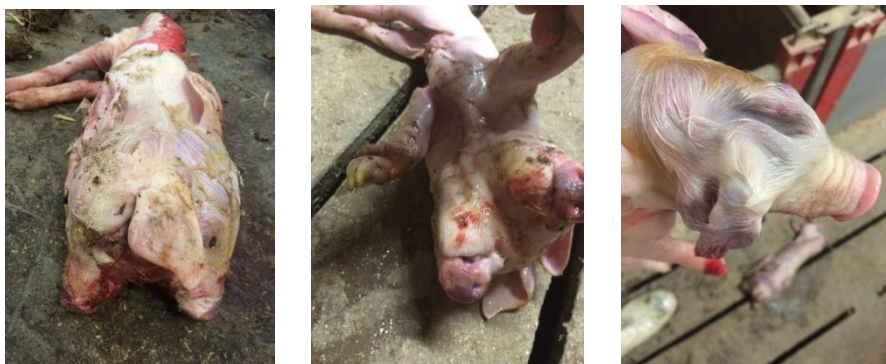
1 x Leg / Feet Deformity:



3 x Sex organ Deformities:



2 x Head Deformities:





2 x Soft Tissue Deformities:



2 x Spinal Deformities:



The two last photos show severe Diarrhoea. According to Aarhus University's study likely caused by Roundup – residues in the feed, as Glyphosate as an antibiotic with selective effects on the intestine's microflora, favours bacteria's like clostridium difficile.



The photos are taken a week after one new load of grains were delivered in the bin and by next delivery the problems disappeared again. My experience tells me that the load that caused this outbreak of diarrhoea would have been sprayed down grains.

[http://dca.au.dk/fileadmin/DJF/Notat\\_gmofoder\\_uk\\_version Memorandum on The feeding of genetically modified glyphosate resistant soy products to livestock.pdf](http://dca.au.dk/fileadmin/DJF/Notat_gmofoder_uk_version_Memorandum_on_The_feeding_of_genetically_modified_glyphosate_resistant_soy_products_to_livestock.pdf)

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**Farm 2** is a farm where I worked for one day with 46 litters of pigs – about 550 piglets.

I found two piglets with deformed tails and one with no eye inside the eyelid on the left side.

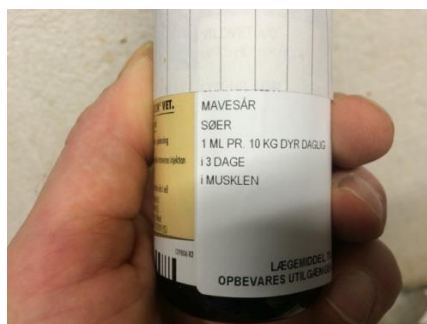
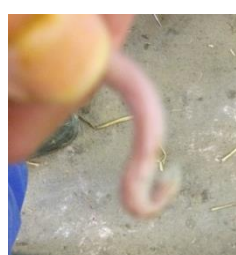


According to my own findings regarding ratio between the different types of deformities and the ones from the farm near Hobro, it would be safe to estimate, that had I been in the farrowing house for one week I would have been able to find at least 1-2 more deformed pigs at birth, in the 46 litters.

The herd was likely to have about 1 % deformed pigs, ½ of the grains were sprayed with Roundup prior to harvest, and GM soya was used in the feed.

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**Farm 3** is a farm I worked on for the weekend. There were 5 farrowing's and of these there were two deformed piglets. No sprayed grains, but GM soya was used, in the farms milling facility.



Ulcers were a problem amongst sows in the herd, so much so that medicine was prescribed.



**Statens Husdyrbrugsforsøg, later Århus University did from 1988 to 1990** make a huge and thorough study of pigs, Rabbits and Bulls, to find out if there are problems with Roundup – residues “glyphosate” and / or Cerone ( a straw shortener) in feed.

### **Significant findings in the Rabbit study:**

The study had noted that group 2 fed Roundup sprayed grains and straw, had the lowest number of offspring, 1 less per litter. They left out calculating statistically significant numbers, as the Roundup + Cerone group had almost similar numbers to the control group. It seems unprofessional, as a huge number of offspring were born in the study and one group fed a different diet (cocktail effect) should not nullify another.

- 1. Conception rate worsening with higher dosage of Glyphosate in the feed**
- 2. Live born dropping significantly, and worsening with higher levels of glyphosate in the feed!**
- 3. Two rabbits aborted in highest Glyphosate dosage group, the only two abortions in the entire study of 146 birth combined**

I have set up the data from the study on one page, so that it is easier to overview.

The highest dosage of glyphosate in the first study had 2 / 29 abortions; abortions are very rare in rabbits and at the same time, a significantly lower number of offspring of 1.4 less than control group

The rabbit study: first part. 3 L Roundup sprayed / Ha barley. 25% straw and 21% grains contents in feed

Table 3.8

0ppm Glyphosate in feed	96 % Conception rate	9 liveborn / litter	25 births
4.6ppm Glyphosate + Cerone	92% Conception rate	8.9 Liveborn / litter	26 births
5.79ppm Glyphosate	<b>90% Conception rate</b>	<b>7.6 liveborn / litter</b>	<b>2 rabbits aborted</b> 29 births

Table 3.11

Double dosage roundup (6) L / ha sprayed / ha barley 25% straw and 21% grains contents in feed

0ppm Glyphosate in feed	85% Conception rate	9.3 liveborn / litter	33 births
13.2ppm Glyphosate	<b>82% Conception rate</b>	<b>8.3Liveborn / litter</b>	33 births

Reference: page 22 and 24 table 3.8 and 3.11 [http://web.agrsci.dk/pub/sh\\_beretning\\_663.pdf](http://web.agrsci.dk/pub/sh_beretning_663.pdf)

### **The pig study beretning 677 from 1990** [http://web.agrsci.dk/pub/sh\\_beretning\\_677.pdf](http://web.agrsci.dk/pub/sh_beretning_677.pdf)

There were 2 statically significant findings:

1. The pig study found that statistically significant 1 pig less was born in groups fed Cerone (straw shortener).
2. In groups with Roundup + cerone treated grains there were statistically significant higher mortality amongst the piglets 18% compared to 10 % in the control group.

But there were incorrectly taken 2 litters out of the calculations, due to “all pigs died due to Diarrhoea” and “all but 3 died after an early farrowing”. These pigs came from Roundup – Group 2. Clearly these pigs were live born, and should have counted in the trial.

If the pigs were accounted for, there would have been one more statistically significant finding:

1. In Roundup group 2. Page 27 there would have been only 8.3 pigs weaned per litter and thus only 79% piglet survival, and that would have been statistically significantly less than control and R+C groups

Another observation from the study, that gives cause for concern when looking at my pig house findings:

2. In the 40 sows that got dissected at the end of the study, one sow had severe inflammation of the stomach; it came from Group 2 roundup treated grains from the study in Roskilde. The exact group that had the highest Roundup levels in all the groups. Feed calculated to 3.2ppm Glyphosate + it had straw allocated from the same sprayed crop. This indicates that stomach inflammations at high levels of glyphosate in the feed could have a connection? Reference: Page 44.
3. It should also be noted that the fact that from 40 sows checked for ulcers in the study, only one had severe inflammation, no sows had ulcers. The knowledge centre for pigs had found that in 2013, a staggering 51% of 1023 sows had or had had ulcers. Source: [http://vsp.lf.dk/Publikationer/Kilder/lu\\_medd/2013/975.aspx](http://vsp.lf.dk/Publikationer/Kilder/lu_medd/2013/975.aspx) today spraying of crops with Roundup as a desiccant is more frequent and GM soya is the norm.
4. Monsanto helped to conduct the study.

Unfortunately the people behind the study did not realize that the two happenings that occurred in the Roundup group. One sow had all pigs born early and all but 3 died, and one sow had all pigs die in the first week, due to severe diarrhoea, should not have been classed as odd events and should certainly should not have been removed from the experiment, as they, in fact, were. The decision to remove the events from the study, goes against the farmers, advisors and veterinarians observations in herds all over Denmark. This was the very reason that the study got under the way in the first place.

Fertility and milk yield sows first experiment – Foulum.

0 glyphosate in feed	10.5 live born 9.1 weaned	88 Piglet survival %	7.3 L milk / day
1.08ppm Glyphosate in feed	10.6 live born 8.7 weaned	85 Piglet survival % *	7.2 L milk / day
<i>1.08ppm Glyphosate in feed</i>	<i>10.6 live born 8.4 Weaned</i>	<i>79 Piglet survival % **</i>	<i>7.2 L milk / day</i>
0 gly phosate + Cerone	9.5 live born 8.7 weaned	92 Piglet survival %	7.1 L Milk / day
2ppm Glyphosate + Cerone	10.4 live born 9.1 weaned	87 Piglet Survival % *	<u>6.8 L Milk / day*</u>

Experiment nr 2 Roskilde

0 glyphosate in feed	11.5 live born 10.1 weaned	90 piglet survival %	8.6 L milk / day
3.2ppm Glyphosate in feed	10.9 live born 9.8 weaned	90 piglet survival % *	<u>7.8 L milk / day*</u>
0 Glyphosate + Cerone	10.7 live born 10 weaned	94 piglet survival %	8.1 L milk / Day
2.88ppm Glyphosate + Cerone	11.9 live born 9.9 weaned	<u>82 piglet survival % *</u>	<u>7.3 L milk / day*</u>

- There is a clear trend in the study, groups with Glyphosate in the feed has got lower milk yield, and lower piglet survival%

\*\*Note that the removal of the two groups that had all but 3 pigs die in the roundup group changed the results from being statistically significant lower piglet survival % - a huge error, that contradicted all the advisors, farmers and veterinarians that had noticed adverse health and fertility issues in the herds.

The findings support the findings in my herd. There is 6-7% higher survival, and 0.2 – 0.8 L milk more per day in groups without Glyphosate, the same as I have seen in my herd. I have also seen many of the same problems with early born and diarrhoea caused by Clostridia difficile, when feeding GM soya to the sows, exactly the symptoms Aarhus University said were likely to occur more frequently, when feeding with Roundup residues.

Source; [http://web.agrsci.dk/pub/sh\\_beretning\\_677.pdf](http://web.agrsci.dk/pub/sh_beretning_677.pdf)

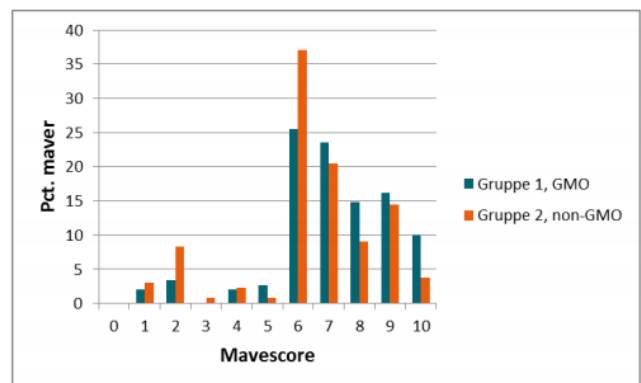
## Ulcers

A Danish Ulcer study was carried out, after I had been invited to the knowledge centre for farming, (now called SEGES). I was asked to explain my findings to the top leaders of the organisation, regarding pigs, cows, arable, chemicals and genetically modified organisms (GMOs). The Danish “Knowledge centre for pig production” then offered to make a feeding study on pigs, with regard to GM versus Non-GM soya, to find out if my observations could “hold water” The reason that an ulcer study was suggested was that the knowledge centre for pigs had done a large number of ulcer studies, as ulcers are a huge problem in pigs today, and the centre had a lot of experience with ulcer studies. This is the outcome: [http://vsp.lf.dk/Publikationer/Kilder/lu\\_medd/2015/1058.aspx](http://vsp.lf.dk/Publikationer/Kilder/lu_medd/2015/1058.aspx)

English translation of ulcer study: <..\..\Dropbox\Danish VSP pig study GMO v NON-GMO.docx>

**Study 1** - Made with good research protocol and carried out at a research station.

1. The study found that a significant difference of 13.7% more ulcers was seen in the GM fed pigs. Figur 1 column 8-10
2. An even bigger difference in stomach health is not commented on in the study. If one looks at column 7-10. There are no figures mentioned, but measuring on the graph, about 17% more pigs suffered from ulcers larger than 0,5cm in length in GMO group. This would also have been a statistically significant finding! But it did not get mentioned in the summary.



Figur 1. Mavescore i den hvide del af maven, fordeling på mavescore fra 0 til 10. Forsøg 1.

**The 2nd study** was carried out on a farm, as a hasty follow up to the first study.

The second study was riddled with a bias research protocol and a poor interpretation of the results. So poor that it got a bad reception from the free farming press. So much so that it stated that this study, due to poor design – especially in the second study, and the poor interpretation of the results, did certainly not free GM soya from causing damage to stomachs. The “knowledge centre for pigs” is not a university, but part of the farming organisation in Denmark and the farming organisation looks positively on GMOs and certainly positively on the use of Roundup.

The second study is of a poor design, and it looks like it has only one purpose: to discredit the findings of the first study. It was made in secret and got started straight after Monsanto had been to view the results of the first study. The second Study was not planned from start and there has been a deliberately delay in publishing the study results for more than 3 years. Likely because the topic was politically hot, with NGOs from England interested in getting the results in writing. The knowledge centre did show parts of their studies straight after they had been made, but only at a presentation at their annual seminar and very unusually, the head of GMO risk assessment from DTU, Jan W Pedersen was there to explain the study. The very same man that has advised the Danish Parliament to introduce GM soya feed and food in Denmark! The leader of the study Dr Niels Kjeldsen from the knowledge centre for pigs, and Jan W Pedersen both claimed there to be no harm from GM soya or Glyphosate in pigs regarding ulcers, disclaiming the findings of the first study with the second study. They even went as far as to say that all the other effects I had seen from the changeover to Non-GM soya in my herd were unlikely to be correct, because their GM feeding study did not show anything.

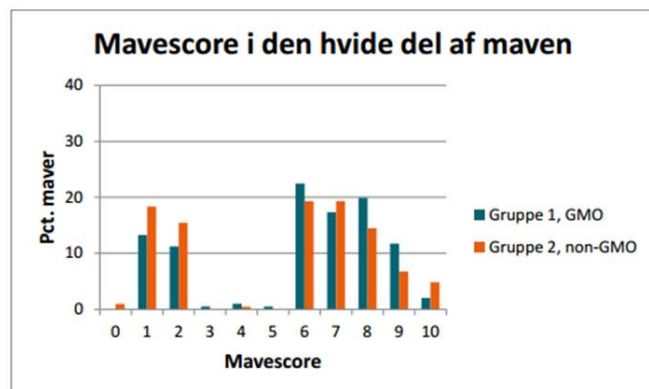
The second ulcer study’s main faults in design and summary:

1. The study weaned pigs from 7 kg and fed GM or Non-GM soya in the feed from 7 kg. But NO data is readily available from 7 to 13 kg. The exact size that pigs are at their most vulnerable and therefore would produce the clearest findings, if harmful products were in the feed.
2. Medicine usage from 7-13 kg that in most herds represent the highest medicine usage is left out of the final paper –why?- it was 50% higher from 13 -30 kg in GMO group, but no data is readily available from 7-13 kg.

- At 30 kg the pigs were sorted, to remove pigs enough that the remaining could stay in the same pens until slaughter weight. The problem is that the Non-GM pigs had grown 0.6 kg more at the same time compared to GM group and when the farmer took the biggest pigs to market and also removed the smallest from the experiment, to alien the groups, he would have taken most of the big pigs in Non-GM group, and most of the small pigs from the GM group. The knowledge centre for pigs is, as it claims to be the world's leading centre for knowledge about Ulcers in pigs, fully aware that fast growing pigs don't have ulcers, and slow growing pigs do have ulcers, as ulcers are painful. The selection favours the GM group, which would have had all the pigs with worst stomachs removed in this selection
- The GM soya did by mixing and feeding contaminate the Non-GM fed group, with 5-600 g soya per 100 kg feed, it would help to show less difference, again to GM soya's advantage.
- The Non-GM group got too high energy levels in their feed, from 112 to 115 Fes GMO v. NON-GMO. It is as mentioned in the study known to give worse productions results and it might stress the stomachs.
- Only a quarter of the pig's stomachs were tested for ulcerations. There is no mentioning of how they were selected, and worst of all, by only testing a quarter of the stomachs the statistical significant findings had to be higher than 14 %. Cosy, as the first study, with a good research plan showed a 13.7% difference. Again a huge advantage to GM soya.
- In the economy calculations in study 2 the dead pigs from 7-30 kg were left out. Dead pigs have the biggest influence on economy in weaner pigs! That together with the higher than normal energy levels in the Non-GM feed, the fact that Non-GM soya contains more energy and proteins etc. and therefore fewer kg Soya is needed and the unfair selection at 30 kg, totally disqualifies any economy calculations. The main argument for advising to continue with GM soya in the feed.

#### The usable results of Study 2:

- GM soya fed pigs had 8% more severe ulcers column 8-10, and 9% more if included all ulcers from column 6-10 figur 4 and tabel 6. Shown here on the right. (Reference page 15.)
- Mortality in weaners (7-30kg) were 2.3% (34/1070) in GMO group and 1.8% (19/1070) in Non-GM a difference of 15 pigs! (Reference page 2 – 14 – 15).
- Medicine usage was 50% higher in GM fed group (7-30kg) (Reference page 12.)



Figur 4. Mavescore i den hvide del af maven, fordeling på mavescore fra 0 til 10 (196 maver i gruppe 1 og 207 maver i gruppe 2). Forsøg 2.

Tabel 6. Mavesårsindeks (den hvide del af maven). Forsøg 2.

	Gruppe 1. GMO	Gruppe 2. Non-GMO	p-værdi
Antal maver undersøgt	196	207	
Pct. maver med indeks 6 – 10	73	64	p=0,16
Pct. maver med indeks 8 – 10	34	26	p=0,35

Mindste sikre forskel er ca. 14 procentpoint.

- The big discovery that is to be found in this study, (and unfortunately left out of the summery) is that the Glyphosate tests that are shown in Appendix 4 figure 1 and 2 is very similar for the two groups and the difference is only 0.06 to 0.2ppm – Gram per ton. Least in the last feed before slaughtering and monitoring of stomach health. This relatively small difference in toxic load to the stomach due to Glyphosate, of near 0.5ppm contamination in both is not able to explain a 9% increase in ulcers! The study from 1988 -1990 [http://web.agrsci.dk/pub/sh\\_beretning\\_677.pdf](http://web.agrsci.dk/pub/sh_beretning_677.pdf) showed as earlier written in this evidence that of 40 sows only one sow had severe inflammations due to a high Roundup load of 3.2ppm Glyphosate in the feed + allocated barley straw sprayed with 3L glyphosate / ha crop. Even this high dosage did not make ulcers! But severe stomach inflammations  
**This fact points to that the only other variable in this study – GM soya is to blame for the increase in ulcers.**



WSP and DTU presenting their findings at VSPs seminar 2013:

The graph used to tell the audience that GM soya is “safe” at the seminar is a very biased presentation of the findings that actually showed 13.7 % significant difference in severe ulcers! (and even 17% more ulcers bigger than 0.5cm from group 7-10!) . Leaving out the group 8-10 that showed the 13.7 % difference in the farming press and at the same time, not putting the findings online. Farmers are even today feeding their pigs GM soya, not knowing that it makes ulcers in their pigs. (There are ulcers in 30% of slaughter pigs and 51% of Danish sows at slaughter according to a recent study from knowledge centre for pigs!) [http://vsp.lf.dk/Publikationer/Kilder/lu\\_medd/2015/1058.aspx](http://vsp.lf.dk/Publikationer/Kilder/lu_medd/2015/1058.aspx)

Newspaper cuttings from the presentation at the VSP seminar: 3 years later the paper got put online!

### GM versus Non-GM feed study on pigs in USA showed the same result!

A similar study on GM versus Non-GM feed took place in USA at the same time as this Danish Study. It found the same differences in more severe stomach inflammations due to GM feed, so all three studies of pigs on GM and Non-GM feed showed the same results! This further supports my farm observations. See: <http://gmojudycarman.org/new-study-shows-that-animals-are-seriously-harmed-by-gm-feed/>



Scientific studies have been done, which can explain how the GM soya itself can create ulcers. Arpad Pusztai’s research on potatoes that he genetically engineered showed similar findings and the GMO insert in today’s GM soya is made with the exact same tool that Arpad found made the adverse health effects.

Arpad Pusztai’s study :

[https://www.google.dk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwIF\\_Z3qrILPAhUKISwKHRMvCOQFgggMAA&url=http%3A%2F%2Fwww.biosafety-info.net%2Ffile\\_dir%2F5484953954e37b7187837d.pdf&usq=AFQjCNGmO3i7bZGUKIJNhk9UQ5dipEA9aw](https://www.google.dk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwIF_Z3qrILPAhUKISwKHRMvCOQFgggMAA&url=http%3A%2F%2Fwww.biosafety-info.net%2Ffile_dir%2F5484953954e37b7187837d.pdf&usq=AFQjCNGmO3i7bZGUKIJNhk9UQ5dipEA9aw)