



STAGE 3: THE NEWBORN PIGLET



Current situation in dealing with newborns

It is quite clear that the increase of litter size induces a decrease of mean birth weight and a concomitant increased proportion of light piglets. Although the uterine blood flow increases when litter size increases but it does this in a lower extent. This results in a reduced uterine blood flow per foetus.⁷³ This decreases birth weight is of major importance with regard to its consequences on viability. Indeed pigs weighing less than 1 kg at birth have very little chance of being still alive at weaning. In addition, when they survive, their performances in lactation are lower than the heavier piglets and thereafter growth performance over the post weaning period are also affected.⁷⁴

The additional problem of larger litters is that up to 40 % of the piglets don't receive enough colostrum right after being born.⁷⁵ As mentioned above, piglets are born without any immune protection and it takes a couple of weeks before they can build their own active immunity. The only way to protect them in these critical weeks is through passive immunity supplied by the sow's colostrum. Under the assumption that the sow has a high enough colostrum yield for the litter, the piglet has to be vigorous enough to suckle itself.

Besides providing immunity, colostrum acts also like an energy supply within the first few minutes and is a key factor in saving lives and providing a better start for everybody. The neonate is at 38 C° in the birth canal and if it is lucky, arrives into a 30 C° environment once delivered. But even at that temperature, it quickly burns up what energy it is born with. This depleted energy status, hypoglycemia, is a major reason of crushing.

Early high quality nutrition is important for giving the piglets the best start. High amounts of dry matter feed intake, while piglets are still with the sow support the early development of the gastro-intestinal tract. During the first days of piglet's life, the stomach and intestines grow rapidly. The sow's colostrum and early nutrition are essential in promoting the intestinal development required. This development is mediated through IGF-1. But the concentration of these growth factors on colostrum declines rapidly during the first 24 hours.⁷⁶

Most farms with low preweaning mortality practice strict all out production in their farrowing rooms and never move older pigs back into rooms with younger pigs. Excellent cleaning, disinfection and sanitation practices in the farrowing pens are key. Allowing pigs to stay in the sow longer, by avoiding to induce farrowing until day 116 in gestation, improves birth weight as pigs grow between 45 and 90 g per head per day in the sow the last week of gestation⁷⁷. Secondly colostrum antibodies will increase in the sow as gestation length goes from day 113 to 116⁷⁸. In order to ensure adequate colostrum intake by all piglets split suckling can be of good aid.

⁷³ Pere et al 2000

⁷⁴ Quiniou et al 2002

⁷⁵ Kaat Goris provimi

⁷⁶ Monaco et al 2005

⁷⁷ Pinilla et al 2008

⁷⁸ Farmer 2006



Literature statements about raising newborn piglets

To be able to survive, newborn piglets may rely upon three different sources of energy namely glycogen, colostrum and transient milk. Piglets are born with limited amounts of energy in glycogen depots in the liver and muscle tissues and these depots are sufficient for normal activity for +/- 16 hours. Intake and oxidation of fat and lactose from colostrum must supply sufficient amount of energy to cover at least another 18 h until transient milk (milk from 34h after farrowing till 4 days in lactation) becomes available in the sow around +/- 34 h after the first piglet is born. Right after birth and before adequate suckling, newborn piglets are in negative energy balance.⁷⁹

Piglets that fail to suckle or who don't suckle enough will stay in this negative energy status. An additional problem of smaller birth weights is that smaller piglets needs relatively more energy compared with their heavier siblings due to their higher surface to volume ratio.⁸⁰ Most piglets that die are lost during the first 3 postnatal days and short term survival is much more relevant to focus on than long term survival (till weaning).⁸¹

The piglet in the first two weeks after farrowing is mainly dependent on the sow's milk for nutrition because it is taking little or no creep feed. 20 to 30% of early piglet mortality is due to lack of adequate nutrition that could be due to inadequate milk production by the sow. Therefore, an early and high intake of colostrum is a major determinant of piglet survival during the early suckling period.⁸²

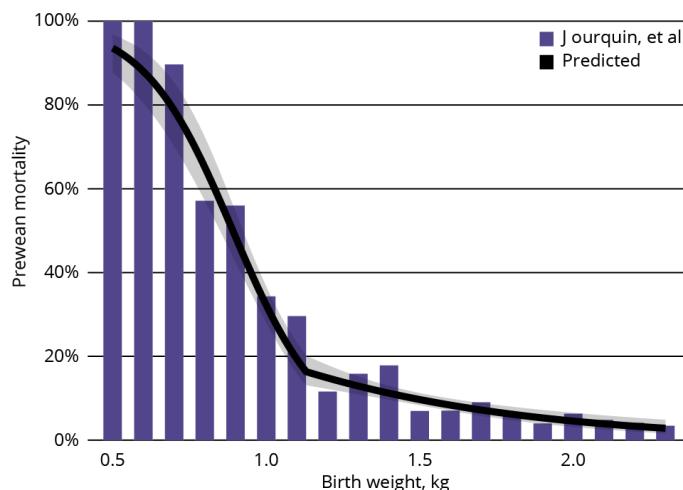


Fig 8: Influence of birth weight on survivability

Growth of 250 g per day in the farrowing pen is set as a benchmark these days but not easy to reach. Different management systems like foster sows, nursery cages or milk cups are put in place to cope with the large litter sizes. These systems can only succeed financially if all the piglets had colostrum. But the overall conclusion in literature is that the greatest financial benefits comes from leaving the piglets as much as possible with their mother.⁸³

⁷⁹ Theil et al 2014

⁸⁰ Noblet et al 1987

⁸¹ Tuchscherer et al 2000

⁸² King'ori 2012

⁸³ Kristien vanbellegem 2015



The key for sturdy piglets that are easy to wean is dry matter intake. Sows milk for example is constituted for almost 21% out of dry matter.⁸⁴ It is of upmost importance to start as early as possible with creep feeding because piglets tend to learn the quickest before they are 3 days old. It is also important to differentiate between feed usage in the farrowing pen and actual feed intake. Trials showed that piglets that got creep feed from day 1 instead of a few days later used less feed but achieved higher weaning weights.⁸⁵ Research also showed that piglets that were able to learn to eat as soon as possible together with the sow and could satisfy their natural burrowing behavior showed less tendency for tail biting their litter mates⁸⁶

Today the general belief is: offering a milk replacer next to a sow's milk in the first two weeks after birth and investing in a premium pre-starter diet around weaning provides short, middle and long term benefits. It is also accepted that light weight piglets benefit the most from this nutritional strategy and that nutrition in early life steer the within-batch homogeneity, the growth and survival rate in the nursery phase and overall performance.

But providing supplemental milk and creep feed does not necessarily lead to a higher weaning weights. The main benefits of creep feed arise from a better development of the gut pre-weaning, which helps the pig to cope with the stressful weaning challenge and reduces post-weaning diarrhea. This is obtained by stimulating the development of the good bacteria in the intestines and reducing the time of starvation in the immediate period post-weaning.

The intestinal microbiota is composed of more than 500 different species, which live in direct symbiosis with the host. They provide energy to the intestinal wall, prevent colonization by pathogenic bacteria and help to maintain the intestinal immune system. It has been demonstrated many times, that the status of the immune system is (partly) defined by the presence and the type of microflora in the intestine. Gut health concept has been recognized and accepted over the last few years as a performance enhancer, but also as a valuable and essential component for the reduction of in-feed antibiotics. This proves that feed additives have a crucial role to play in strengthening intestinal health and reducing antibiotic use.

The high genetic potential of today's production animals, combined with a clear and inevitable tendency to reduce the use of antibiotics, resulting in an increased risk of enteric problems, is a complex situation to manage. But the one single molecule approach is obviously not dealing with all aspects of intestinal health management and will never be able to compete with conventional use of antibiotics.

As literature shows, prevention of pre weaning mortality in piglets and presenting creep feed has to be done as early as possible. For this reason Aradol has developed 2 products. On one hand it offers the Lianol Colostro for an immediate energy supply after farrowing. Its active component has also an immunomodulatory effect and promotes the growth factor IGF-1.

On the other hand it advises BASDIAR; a 100% organic feed in addition to sows milk from the first day. This is in order to learn the piglets to eat as soon as possible and to install a healthy and stable intestinal microbiota that can cope with the exposure to possible pathogens.

⁸⁴ Tijl vanmeenen; Le Dividich and seve. 2001

⁸⁵ Tijl vanmeenen

⁸⁶ Bolhuis. 2005



Supplementing your piglets with the right additives right after birth.

Trial 5: Commercial trials in Italy, Russia and Poland

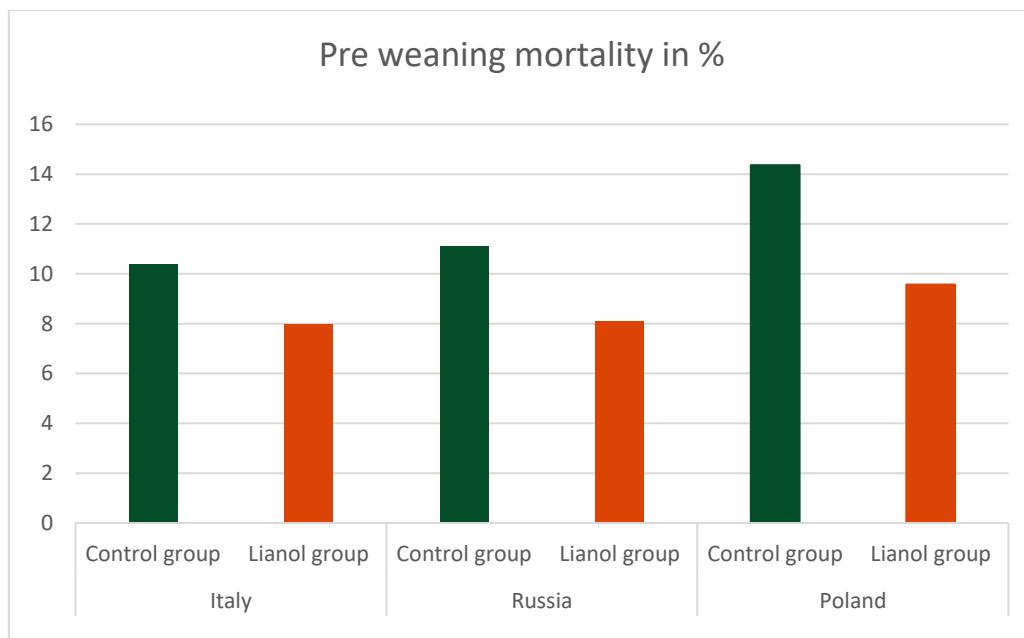
The use of 2ml Lianol Colostro for piglets right after farrowing to increase their colostrum intake and therefore lowering their preweaning mortality and optimizing their pre weaning performance.

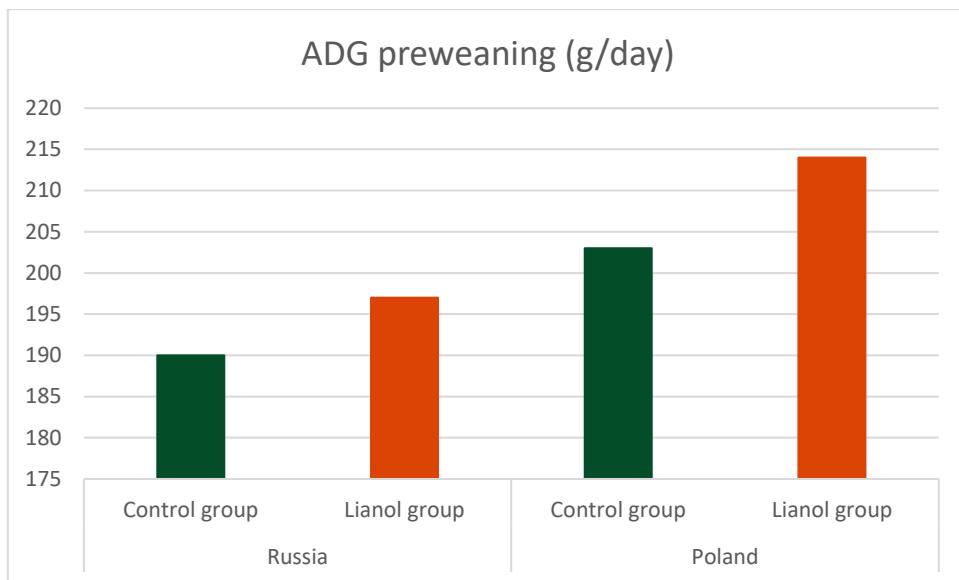
Material & Method:

- Italy 806 piglets, Russia 819 piglets and Poland 801 piglets, divided over the control and the Lianol group.
- The Lianol group received 2ml of Lianol Colostro per piglet right after farrowing. The control group had no treatment.
- Mortality and ADG before weaning was measured.

Results:

	Italy		Russia		Poland	
	Control group	Lianol group	Control group	Lianol group	Control group	Lianol group
Number of life born piglets	413	393	423	396	390	345
Weight at weaning in kg	x	x	6.7	6.9	6.24	6.30
Pre weaning mortality	10.39%	7.98%	11.11%	8.08%	14.36	9.57
ADG pre weaning g/day	x	x	190	197	203	214





Conclusion:

The use of 2ml Lianol Colostro for piglets right after farrowing decreased their preweaning mortality and boosted their average daily growth till weaning.

Trial 6: PVL Bocholt – Test and formation centre – commercial farms in Spain

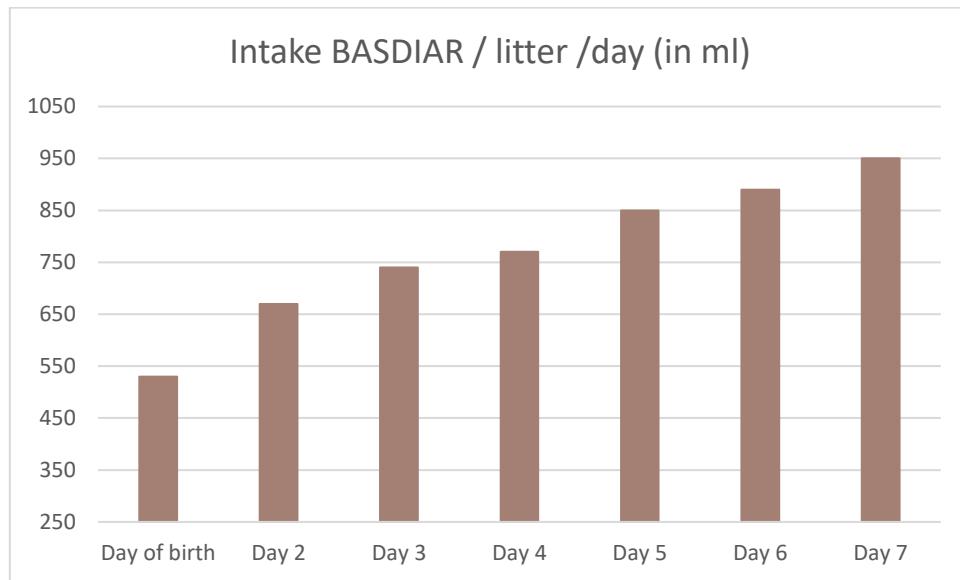
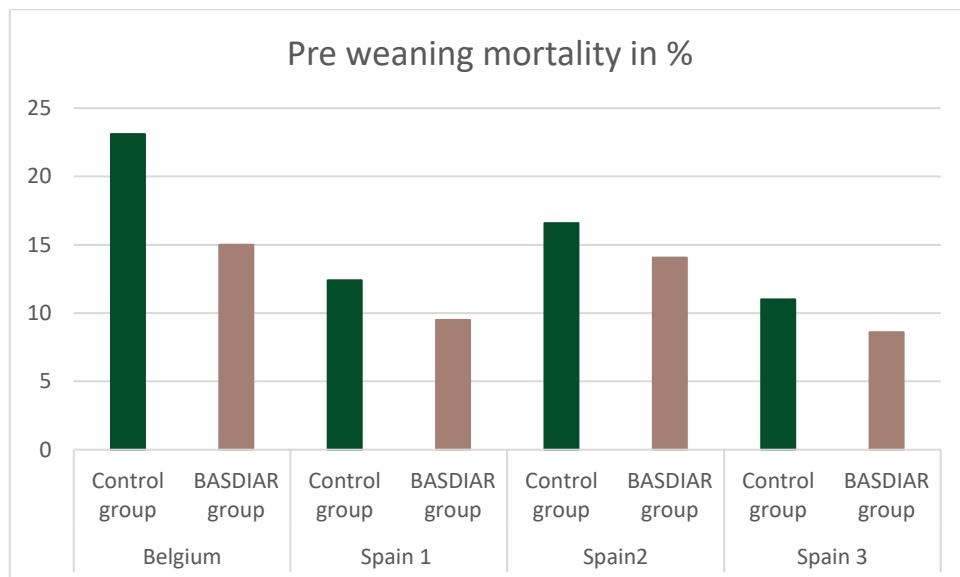
The use of 100 gram BASDIAR per litter per day during 7 days starting at birth installs a healthy and stable intestinal microbiota that can cope with the exposure to possible pathogens. It allows the piglet to digest the nutrients contained in the sow's milk in an optimal way boosting its performance.

Material & Method:

- Belgium 1044 piglets, Spain 43137 piglet over 3 farms, divided over the control and the Lianol group.
- The Basdiar group received 100 grams of BASDIAR diluted in 1l water per litter per day, during 7 days from the moment of birth. The control group had no treatment.
- Mortality and ADG (where possible) before weaning were measured.

Results:

	Belgium		Spain 1		Spain2		Spain 3	
	Control group	BASDIAR group						
Number of life born piglets	522	522	9307	31047	368	377	520	474
Pre weaning mortality (%)	23,1	15	12,4	9,5	16,58	14,06	11	8,6
Weaned piglets /sow	11,33	12,58	10	10,6	10,3	10,8	11,1	11,7
ADG pre weaning g/day	213,6	223,7	x	x	x	x	x	x
Weight at weaning in kg	7,06	7,25	x	x	x	x	x	x

**Conclusion:**

The use of BASDIAR the first 7 days of a piglets life decreased pre weaning mortality, favored the average daily growth before weaning and resulted in heavier weaning weights.