

Piglet drink decreases mortality and increases weaning weights

Multinational trials in farm conditions show that producers can gain an extra 1-2 piglets weaned per sow per year by giving a protein drink from the first week of life.

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Modern sows farrow more pigs per litter. We all see it, every day, showing how better sow productivity has transformed the whole piglet production landscape in less than 20 years.

European herds back in 2000 were generally weaning 19-22 pigs per sow per year. By 2008 an all-EU average was up to 24 pigs per sow. Individual countries in Europe that were averaging only 22-23 pigs as recently as 2010 are now achieving 27-28 pigs weaned per sow annually.

At the root of the change is a genetically driven upsurge in the numbers born per litter. But that has brought its own drawbacks as well as benefits. Bigger litters carry a greater risk of lower birth weights and less uniformity. A primary challenge for every herd manager today, therefore, is how to keep as many piglets as possible alive up to weaning and beyond, so that the gain from a larger litter at farrowing is not reduced by a higher pre-weaning mortality rate.

Protein powder in water

A new way of boosting the survival of all piglets has been found. It comes from offering a pleasant-tasting isotonic protein drink to the pigs from an early age. The drink is made from a protein-rich proprietary powder mixed with clean water. Detailed studies in several countries have demonstrated its booster effect in piglets given access to the solution out of an open bowl from the second day of life until day eight, with a further benefit to their growth when given during a six-day period around weaning time.

The powder is called Tonisity Px and



contains a patented combination of nutrients. The Tonisity team now has data from both producer and research trials carried out on production sites across Europe, Asia and North America. These trials show an average of 30% reduction in pre-weaning mortality. This handed the herds an extra 1-2 piglets weaned per sow per year. In individual herds, the improvement could be much more. In an independent test of 70 sows at a Spanish location, the use of Tonisity Px between day two and day eight led to pre-weaning mortality improvements from 14.5% to 8.56% – a difference of 41%.

Decreased mortality seen across all birth weights

Mortality in this trial was also tracked until three weeks post-weaning, according to the birth weight of the pigs. The heaviest birthweight pigs, those weighing over 1.6kg at birth had the largest decrease in mortality – a remarkable 61%. Pigs in the mid-range of 1.2-1.6kg birthweight had a 29% reduction. These medium- and heavy-birthweight pigs account for about 80% of all pigs born, which makes their survival essential to successful production. Piglets weighing under 1.2kg at birth had a 43% reduction in mortality, adding an extra production benefit. The beneficial effects of Tonisity Px

are not limited to low-birth weight pigs. It can help piglets of all weight classes.

Not just for large litters

● **Example 1:** Supplementation in the first week of life reduced death losses by 33% in a trial on a weaner producing operation of 7,200 sows in Iowa, USA. Its farm records had shown a pre-trial average of 12.8 pigs live-born and a pre-weaning mortality rate of 13-14%.

Testing 968 piglets from 73 sows up to weaning at around day 19 found a death rate of 15.1% among the controls, but in the supplemented group the pre-weaning mortality was significantly lower at 10.3%.

The data from the various studies show that all pigs benefit, not just the weaker ones or those that are runts or sick. A consistent finding of better piglet survival has been documented across all birth weights.

Not just one study

● **Example 2:** We also carried out a composite analysis which covered 543 litters containing 6,685 piglets. This delivered pre-weaning mortality data from six studies

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conducted over a 12-month period at various sites in Spain and the USA. All treatment litters received 500 millilitres of Tonisity Px solution per day in an open pan from day two until day eight, while control litters were given no supplementation. All piglets were allowed to suckle normally and all litters were weaned at around 21 days of age.

Conclusion: compared to the control group, the pre-weaning mortality of Tonisity Px pigs was lower by 26%.

How and why?

Accepting that Tonisity Px can have a significant impact on the pre-weaning mortality when given during the first week of life, the logical question is how?

For answers, we can start with uptake. Widespread testing and farm use have confirmed that the solution is definitely consumed. Tonisity Px has a sweet and tangy taste that quite clearly appeals to small pigs.

Delivery in an open pan also helps because their natural curiosity draws them to it.

The pigs tend to consume the solution quickly so there is little to attract flies to the bowl. This is reinforced by the fact that the solution is less attractive to insects when compared with milk replacers because it is more dilute.

Mechanisms examined

In theory, the reduced pre-weaning mortality in the supplemented pigs could be explained by several different mechanisms. Could an extra intake of energy provide a likely explanation? Not here, because the standard 3% Tonisity Px solution does not have a high calorie content.

Perhaps, then, Tonisity Px achieves its effect by correcting dehydration in the baby pigs? This too can be ruled out as a probable primary mode of action, because the quantities consumed per piglet equate to just 3-5% of the bodyweight of a 1kg pig, although we should allow the minor possibility that some piglets may be subclinically dehydrated and therefore could be helped by drinking.

Tonisity Px is formulated to achieve what is known as an isotonic balance – meaning an equalised osmotic pressure between the solution and body cells to ensure the ready absorption of nutrients and fluids. Many sports drinks for human consumption are formulated to be isotonic. However, Tonisity Px is not just an electrolyte drink!

The real explanation is that the effect seen is due primarily to the ingredient profile of Tonisity Px. This product contains key amino acids which start nutrition from the inside working out, helping the intestine work more efficiently.

These special ingredients nourish the intestinal cells (called enterocytes) and

supports their work of absorbing proteins and carbohydrates into the body. Feeding the enterocyte cells lets the body absorb more nutrients.

Feeding the enterocytes also helps the intestinal villi grow better. Histopathology investigations in a commercial sow herd demonstrated the beneficial effect of Tonisity Px on intestinal structure.

The villi lining the intestinal wall were 8% higher in the pre-weaning phase, and increased to 16% higher in the post-weaning phase. Taller villi indicate greater health and intestinal functionality.

Similar findings were recently reported in a research trial conducted at the University of Lavras in Brazil.

Recent studies conducted at the University of Minnesota and University of Lavras have also shown that Tonisity Px has beneficial effects on the intestinal microbiome. Significant increases in lactobacillus (a 'good' bacteria) and significant reductions in E. coli were seen in both pre-weaning and post-weaning measurements.

By feeding the enterocytes, we are leading a completely different approach to the conventional route of giving extra energy to piglets in the farrowing house. But, of course, it has been necessary to measure Tonisity Px against the commonly used alternative of giving piglets more energy in the form of a milk replacer.

A recent study at the Swine Innovation Centre (VIC Sterksel) of Wageningen University, The Netherlands, compared giving the 3% Tonisity Px solution between days 2-8 with a group receiving commercial milk replacer and also a group receiving both Tonisity Px and milk replacer in separate pans. The milk replacer used had 20% crude protein, 12% fat and a metabolisable energy content of 16.7 MJ/kg (dry matter basis).

The daily energy intake of pigs receiving the milk replacer either alone or in combination with Tonisity Px was at least 16 times higher than the Tonisity Px group. Yet Tonisity Px outperformed milk replacer and not because it has more calories. What is more, the drink gave results for piglet performance that were as good as, or better than, those in the other groups tested.

Conclusion

Tonisity Px is a unique scientifically formulated isotonic protein drink that decreases pre-weaning mortality across pigs of all birthweights and over a variety of different production systems and litter sizes.

The overall principle of Tonisity Px is that it works by feeding the intestinal cells and helps them absorb nutrients better by improving the overall intestinal structure and surface area of the pig.

Giving Tonisity Px to piglets before weaning results in heavier, healthier animals with benefits up to slaughter. ■



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