Hy•D®

Because it's all on her back

Hy•D®
strength to succeed

DSM Nutritional Products

Unlimited. DSM

Introduction

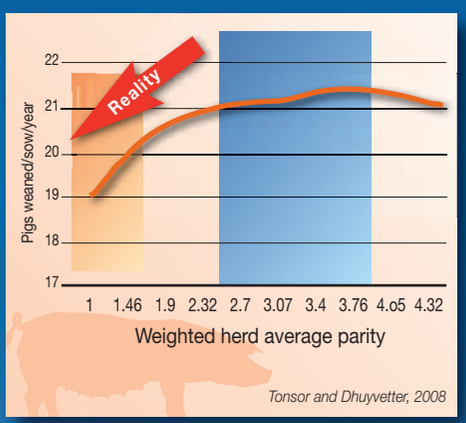
Profitability in swine units depends on optimizing the lifetime output per breeding place. While considerable improvements have been made in reproductive efficiency, litter size and feed efficiency, one area still represents a drain on swine profitability - sow lifetime productivity.

The second largest cost of swine production after feed is replacement cost. The average culling rate in sow herds is high and increased over the last years to levels ahead of 40% *(PigChamp data)*. To achieve highest performance in sow herds a weighted herd average parity number should target 2.5 to 3.8 while actually this figure is moving below 2.5 parities *(Tonsor and Dhuyvetter, 2008)*. Culling sows before three parities has a negative impact on financial performance. It is calculated that a gilt must complete three parities before she reaches a positive net present value *(Stalder et al., 2003)*.

The importance of strong sows and gilts

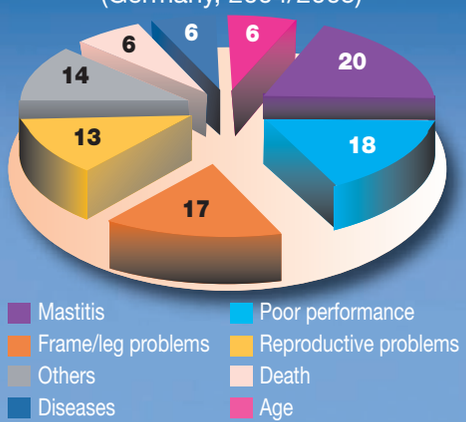
To achieve their genetic potential, modern breeding swine need a high level of skeletal strength. Leg and feet soundness is an important selection criterion for choosing replacement breeding stock.

As many as 30% of the selected replacement gilts may be eliminated for structural failure before producing a litter *(Crenshaw, 2003)*. Frame and leg weakness are among the 3 major reasons of sows leaving herds *(Hilgers & Hühn, 2009)*. Problems associated with poor skeletal structure are influenced by many factors, particularly nutrition. It is well known that calcium, phosphorus and vitamin D_3 play a key role in skeletal development.



Tonsor and Dhuyvetter, 2008

Culling reasons of sows in %
(Germany, 2004/2005)



(Hilgers & Hühn, 2009)

Hy•D® - the fast track alternative

When swine are fed vitamin D_3 in the diet, it has to be converted into the usable form in two steps, first in the liver to 25-OH D_3 and second in the kidney to 1,25-OH-D_3 (see diagram right)**. This functional hormone can then be utilized by the animal.**

The efficiency of this first step is highly unregulated and influences the level of vitamin D_3 available to the animals. The second step is a clearly regulated step and therefore not the critical one. The availability affects the utilization of calcium and phosphorus which is essential to bone health.

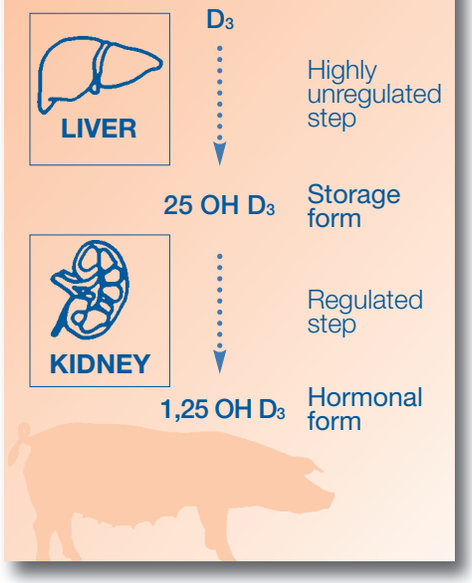
Hy•D® is a unique feed supplement containing 25-OH D_3 which means it bypasses the highly unregulated metabolic step. 25-OH D_3 is the available form of vitamin D_3 in the body and can be found in the animal's blood. Because Hy•D® bypasses this critical metabolic step, it allows the animal to reach higher plasma levels of 25-OH D_3.

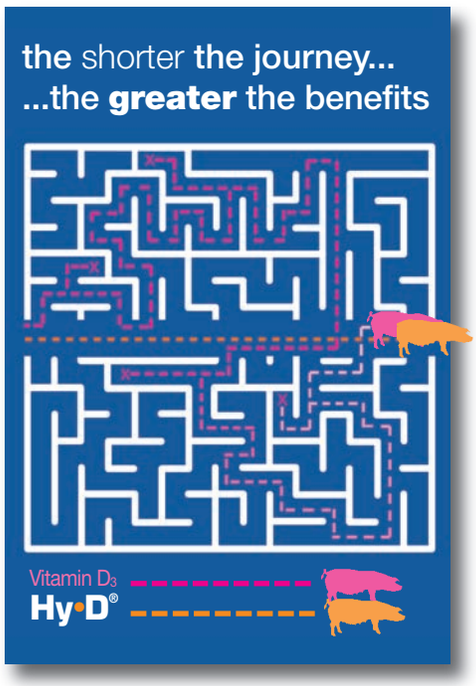
The benefits achieved through feeding Hy•D® can not be obtained just by greatly increasing the inclusion rate of vitamin D_3. It is not a case of feeding more. It is a case of feeding smarter!

25-OH D_3 plays a crucial role in:

- Calcium and Phosphorus metabolism
- Bone strength
- Bone mineralization

Conversion of vitamin D_3 in swine





Adding Hy•D® to the diets of sows and gilts provides benefits on:

- Improved skeletal conformation
- Increased selection rate for gilts
- Increased lifetime productivity of sows

With reduced herd replacement costs and increased lifetime performance Hy•D® offers a significant contribution to greater producer returns.

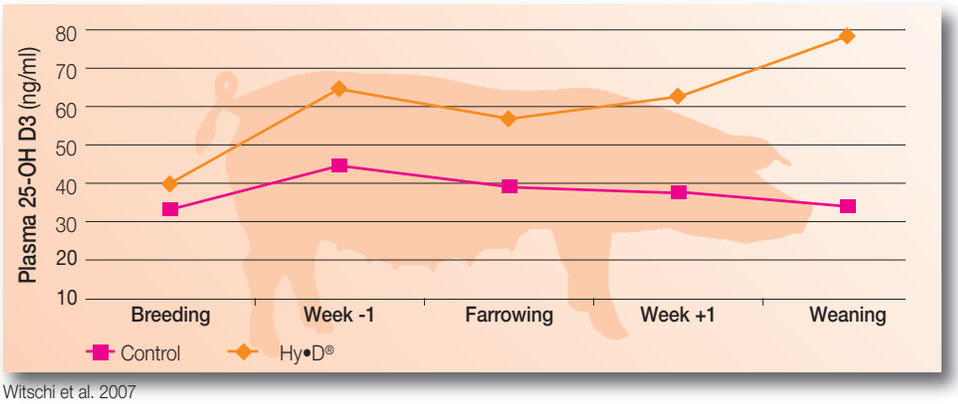
Hy•D® – the results

Results from trials demonstrate the beneficial effect of Hy•D® in pig units.

Higher plasma levels

Better levels of the most effective form

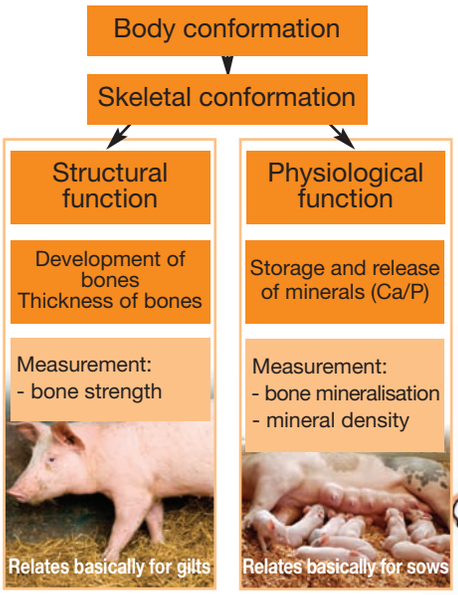
Trials show that swine fed Hy•D®, had raised blood levels of 25-OH-D_3, compared to sows fed equivalent levels of vitamin D_3. This is the base for optimal skeletal health.

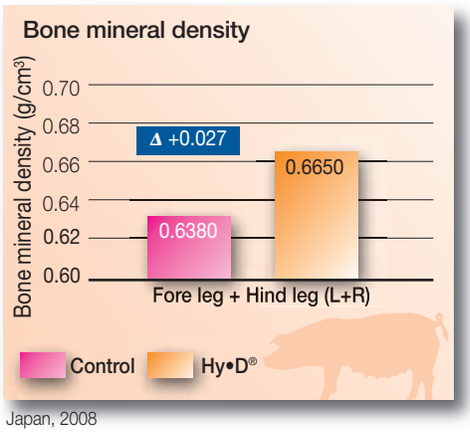


Witschi et al. 2007

Stronger skeleton

Improved bone strength

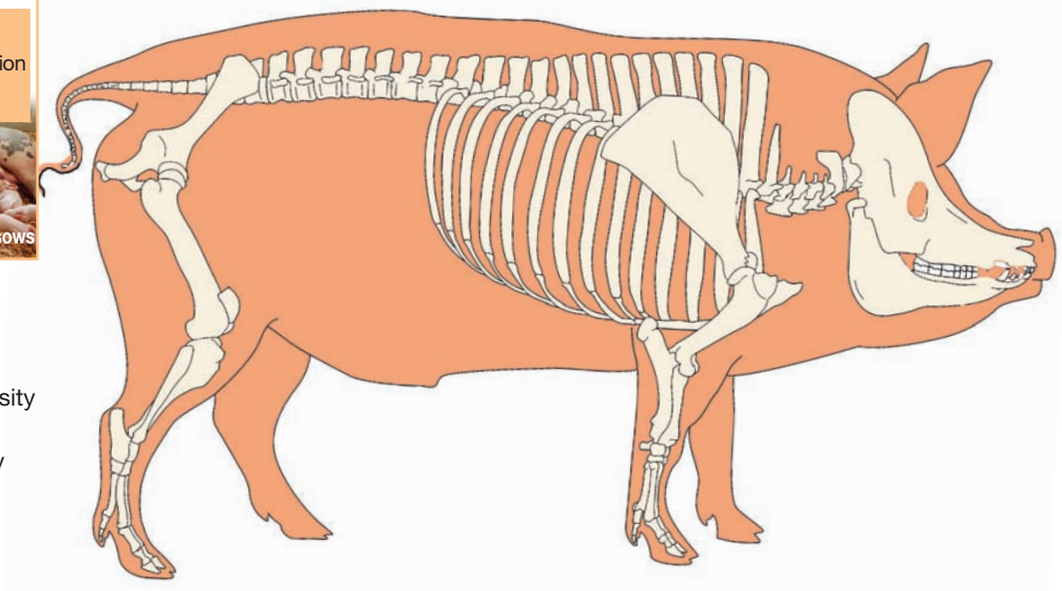




Japan, 2008

Trials with Hy•D® show increases in bone mineral density in sows and gilts compared to control animals.

Animals with greater bone mineral density are less susceptible to locomotive disorders. This promotes a better body conformation of gilts and improves lifetime productivity of sows.



*Control = Vit. D3 2000 IU/kg Hy•D® = 50µg/kg

Increased gilts selection

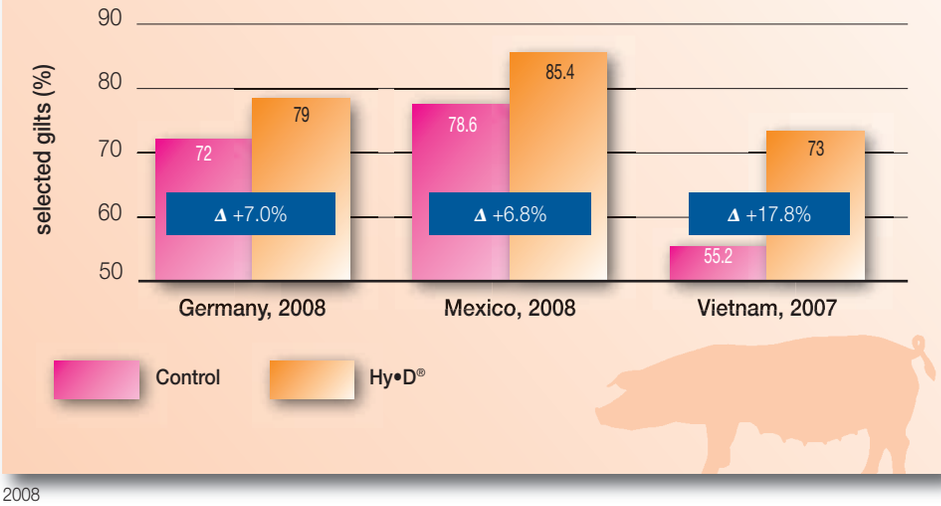
More gilts selected

Trials in several countries show that when growing gilts were supplemented with Hy•D® a higher proportion of those gilts were selected as breeding replacements. More gilts met body conformation selection standards.

This increases the replacements available to improve herd genetic potential.

Example:
7% more gilts translates into a **return on investment** of **9 to 1**

Selection rate of gilts for breeding herds



2008

Better returns in breeding herds

Sows last longer, produce more and make more money

Improving skeleton strength can reduce the number of culls due to leg/bone weakness and so increase lifetime productivity.
As sows are stronger there are also benefits in terms of litter size and piglet weight at birth and at weaning.

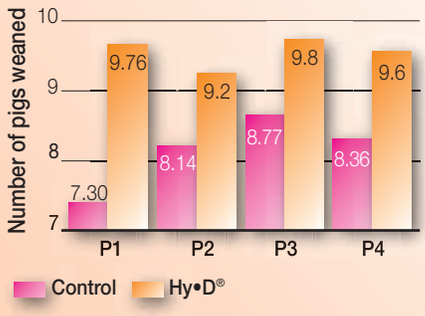
Together, the increased production per parity combined with the increased number of parities leads to greater lifetime productivity and financial returns.

Example:
5% lower culling rate of sows improves reproductive performance and gives a **return on investment** of **3 to 1**

Germany, field trial, 2008

Parameter	Control	Hy•D®
Piglets born alive	10.9	11.4
Litter weight at birth (kg)	15.5	18.1
Piglets weaned	9.4	9.5
Piglet weight at weaning (kg)	7.0	7.4

Philippines, field trial, 2008



Hy•D® – feeding guide

Recommended inclusion levels

	25-OH D_3	ROVIMIX® Hy•D® 1.25%
Gilts	50 µg/kg feed	4 g/t feed
Lactating sows	50 µg/kg feed	4 g/t feed
Gestating sows	50 µg/kg feed	4 g/t feed

To allow the development of a strong skeleton throughout a sow's life, it is recommended that Hy•D® is added to all sow and gilt diets.

When using Hy•D® with vitamin D_3 in the same diet, verify that the existing maximum permitted concentration of vitamin D_3 is not exceeded. Your local DSM representative can support you in this verification.

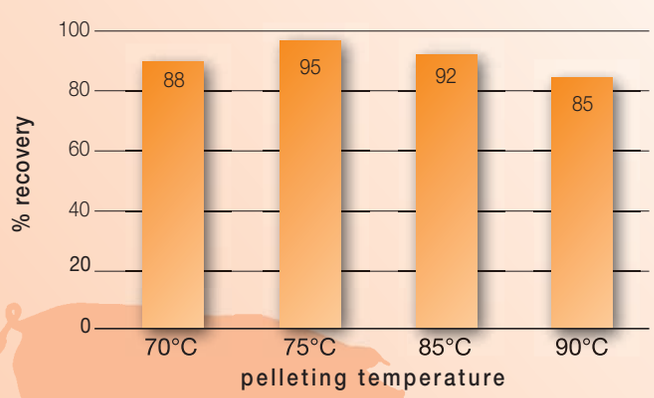
Formulation

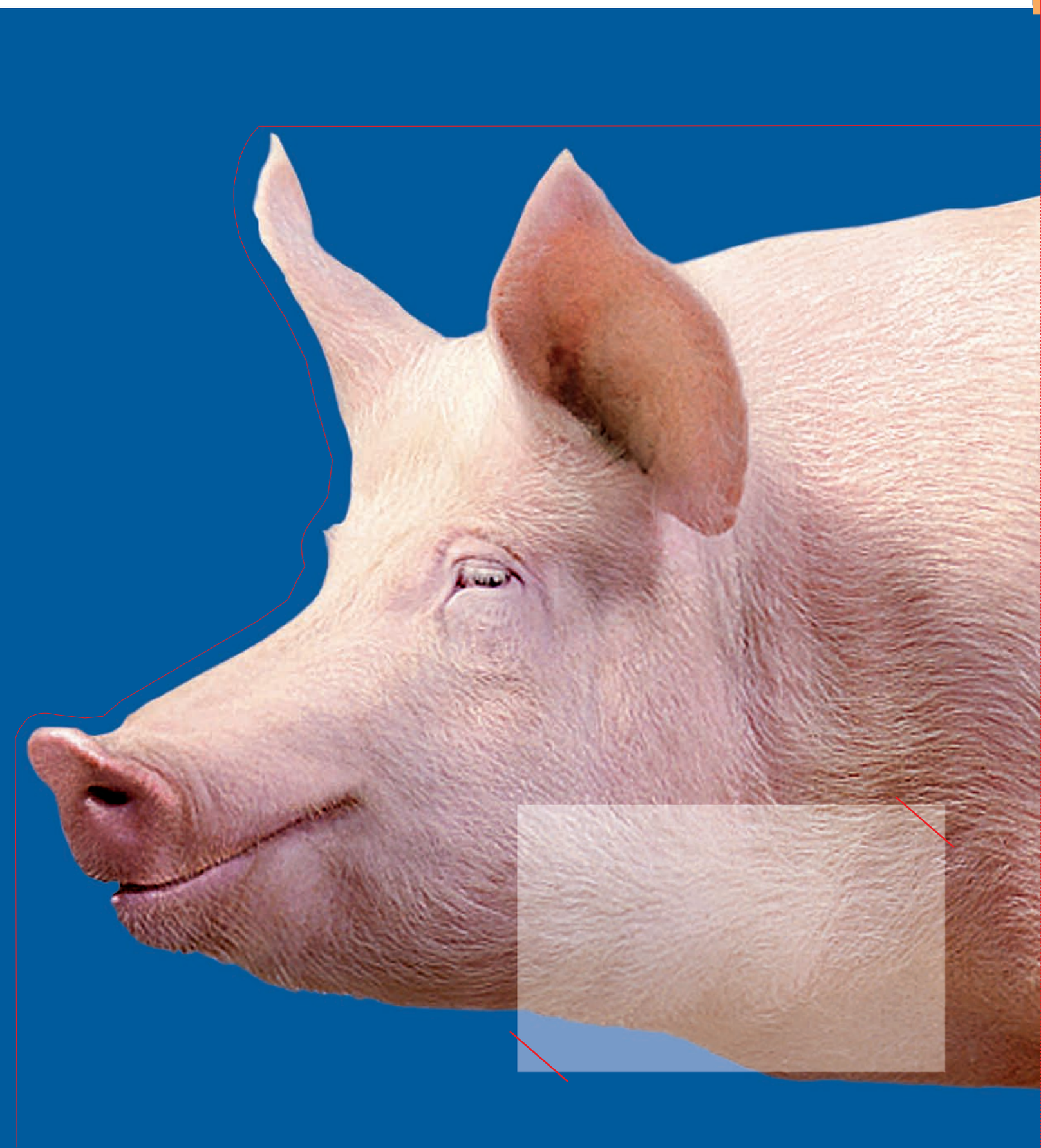
The enhanced formulation utilizing patented spray-dried beadlet technology used to produce ROVIMIX® Hy•D® provides a more uniform, better flowing product with good mixability properties.

Stability

ROVIMIX® Hy•D® is stable when included in pelletted feeds under standard conditions (pelleting temperatures up to 90°C).

Stability of ROVIMIX® Hy•D® in pelletted feed, after processing at different processing temperatures of 70°C to 90°C.





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Quality for Life™

For DSM, quality is a way of life. This is the core of Quality for Life™.

Quality for Life™ is the mark of quality, reliability and traceability. It means that DSM customers are getting the best nutrition & health ingredients, knowing the source on which they depend.
Quality for Life™ means sustainability. It symbolizes our commitment to our environment, consumer, our business partners, our people and the regulatory framework that governs our operations.

With the Quality for Life™ seal, we provide peace of mind for you and for your customers.

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