

Devenish Diary

ISSUE NO. 10

The Official Newsletter of **Devenish Nutrition**

Newline team up with Devenish



Devenish have recently teamed up with a U.K based company to bring cutting edge nutritional solutions to pig farmers across the UK. From their base at Tewkesbury in Gloucester, Newline will work closely with Devenish to deliver the best nutritional and practical advice to farmers. Newline distributes Devenish pre and post starter diets as well as their own range of fixed formulation compound diets. These diets are formulated using the Devicare concept and utilise the innovative ingredients such as DeviGuard and Matan XL to improve the quality of the diets. Pictured at the recent Devenish seminar in Bloomfield House Hotel, Mullingar are Robert Briggs and Chris Wherton of Newline along with Michael Maguire of Devenish.

Dear Reader,

Welcome to our current issue of the Devenish Newsletter. We hope you continue to find this useful and informative and thank you for your feedback on previous issues which we have sought to reflect.

A very significant feature of this Newsletter as with previous documents relates to the research and development emphasis of so much of the material. Whether this relates to something well established such as water intake in pigs or early intake in chicks or an innovation such as DeviGuard, the emphasis continues to be on measurement and overall technical efficiency.

Given the competitive nature of the markets in which we all operate and the rapidly changing nature of these markets e.g. cereal and milk prices, it is critical that fresh thinking continues to be applied even to old subjects. We also wish to take the opportunity to thank our customers for their continued support for our business without which this would not be possible.

We hope you all have a prosperous and successful 2007,

Owen Brennan - Managing Director.

Devenish Nutrition Seminars

Devenish recently embarked on a series of Roadshows to update farmers on research that has been undertaken by the company in order to address some of the issues currently facing the pig industry. Audiences gathered at Cahir, Mullingar and Cookstown to hear informative and entertaining papers from Dr. Wallace Henry and Dr. Violet Beattie. Wallace's paper entitled "Modern Technology to Harvest Slurry Nutrients" examined some of the options that are available to farmers in light of the increasing restrictions that are being put upon the land spreading of animal manure. Meanwhile, Violet presented a very thorough paper introducing some of the newer products in the Devicare range. Violet outlined the concepts behind, DeviGuard and Matan XL and demonstrated their effectiveness at farm level. Both talks were well received by the respective audiences and certainly stimulated lively discussion at the post seminar buffet. Please contact any member of staff for the proceedings.



Pictured in relaxed mood before the recent "Formulating for a brighter future" seminar in Cahir House were: Michael Maguire; Owen Brennan; Dr. Violet Beattie and Dr. Wallace Henry

New Appointments at Devenish

Dr. Fredrik Sandberg has recently joined Devenish Nutrition's US based sister company, Omega Nutrition LLC. Fredrik will be spending some time at our Belfast base before taking up his role with Omega where he will be providing technical support and involved in research. Fredrik is joining Omega nutrition from the Scottish Agricultural College in Edinburgh, where he recently completed a PhD in quantitative modelling of pig nutrition.

Dr. Marian Scott has recently joined Devenish Nutrition on our graduate trainee programme. Marian will be based at our plant in Belfast where she will initially be working on research, formulations and quality control. A native of Dunloy, Co. Antrim, Marian holds a doctorate in Poultry Nutrition from Queens University, Belfast. During the course of her research, Marian's main focus was on the nutritive value of wheat for laying hens.

THE AGRI-TECHNOLOGY COMPANY

An Opportunity to Produce More Milk and Improve Fertility

Morgan Sheehy, Ruminant Nutritionist

Provisional RPA figures for milk production in this quota year to the end of October 2006 indicate total production of 8031 million litres, some 84 million litres less than the corresponding period last year and the lowest cumulative figure since the 1998 / 99 milk year. Given this depression in production, there may be an opportunity for farmers to increase income by feeding cows for extra milk production.

Experience has shown that the inclusion of Megalac® to dairy rations is one efficient way of improving the milk yield of dairy cows. The addition of 500 grams of Megalac® per cow per day to the diet typically lifts total ration energy density by 0.5 Mj which is normally enough to lift milk yields by 2 litres per cow.

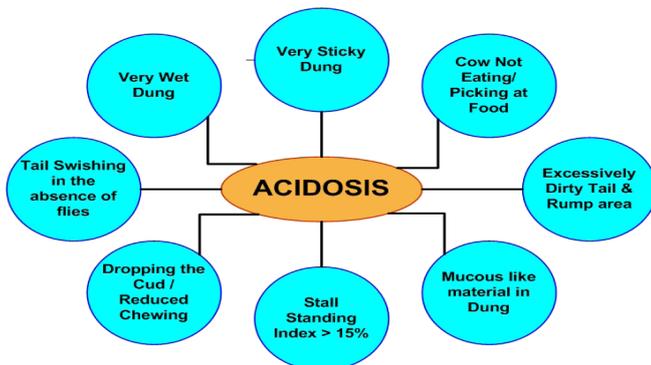
The summer past has presented difficult conditions for the making of grass silage. Consequently we have a wide range of silages on farm. Some are excellent and stable with very good intakes. Unfortunately others are less stable, some are heating, while others have high fibres. Such silages have low intake characteristics and are problematic. These silages require proper ration balancing with particular emphasis on total energy intake if farmers are to reach their goal of filling their quota.

The energy supplied by Megalac® is extremely digestible. A significant advantage of this is that it helps to get cows back into positive energy balance more quickly post calving. Recent research conducted at the University of Edinburgh has shown improvements in fertility coupled with an increase in milk yield due to feeding Megalac®. These results clearly show the simultaneous benefits on fertility and production of feeding Megalac to high performing dairy cows.

Table 1. Effect of Megalac® on Herd Fertility

Herd Fertility	Diet	
	Control	Control + Megalac®
100 day in – calf rate (%)	21.4	45
200 day not in – calf rate (%)	45.2	15
Calving to conception (days)	118	99

Rumen Acidosis Explained



Stall Standing Index = % of cows in contact with cubicle while standing rather than lying

Rumen acidosis is a common problem that is encountered on many farms. Acidosis occurs due to a reduction in the rumen pH. Assessment and diagnosis of sub clinical acidosis (SARA) can be difficult. However more acute cases are easily detected as they often result in significant health and production problems. The diagram above outlines common indicators of acidosis in your herd. The most common cause of acidosis is feeding diets with excessive amounts of rapidly fermentable starch and sugar, together with an insufficient level of long fibre. Diets falling into this category are likely to lead to high levels of acid in the rumen causing a reduction in rumen pH, which in turn will interfere with normal rumen functioning. When this happens, animals are less inclined to chew the cud which further exacerbates the problem. This is because 'cudding' is the natural mechanism by which a cow produces her own buffer, sodium bicarbonate, in order to counteract the potential negative effects of acid in the rumen.

Body Condition Scoring Cows

- Body Condition Scoring (BCS) is a useful management tool.
- Body condition scoring should be conducted at regular intervals throughout the reproductive cycle
- Farmers should condition score their cows 6 weeks prior to drying off and adjust their feeding level to get a target BCS of 3 at drying off
- In the dry cow period cows should be fed so that they have a BCS of 3 at calving
- It is critical to minimise BCS loss in early lactation as this will significantly affect the performance of the herd – the maximum tolerable loss is 0.5 BCS i.e. 30 Kg
- Cows that are over fat ≥ 3.5 BCS in late lactation have depressed appetites and will lose weight prior to calving. These cows are a high risk from milk fever; slow calvings; and retained placenta. This emphasises the importance of having cows at the correct level of BCS prior to calving.
- For further information on Body Condition Scoring, please contact your nutritionist

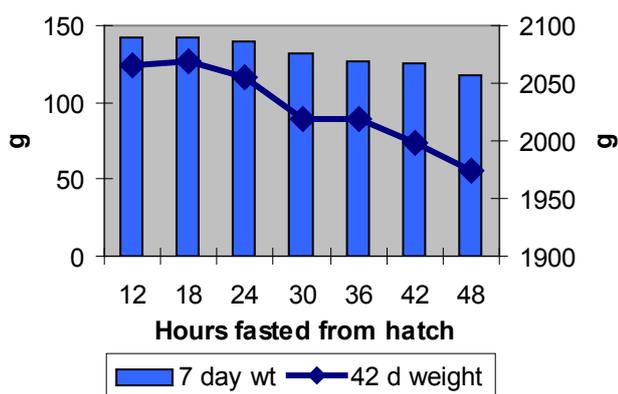
Get Chicks off to a Flying Start

Devenish Poultry Nutrition Team

The first 7 days of the modern broiler's life now represents 20% of its total life and as such is a critical period in determining flock performance. This is a period of extreme physiological and functional development in the gut. At hatch the chick has a relatively immature gut, which must quickly adapt from a lipid rich yolk-based nutrition to a carbohydrate rich feed-based diet. The speed at which physical and functional development of the gut occurs is critical in determining the bird's lifelong ability to digest and utilise nutrients thus allowing its full genetic growth potential to be expressed. Research has shown that one of the most important factors influencing early gut development is access to feed and water post-hatch. This will be determined by two major factors:

- The length of time individual birds spend in the incubator
- The transport time between hatchery and farm

Effect of feed access on bodyweight



In the chick, the most obvious impact of delayed access to feed and water is weight loss due to dehydration. Studies have shown that this weight loss is progressive as hours fasted from hatch increases and that loss in weight due to holding chicks continues through to marketing. More importantly there is increasing evidence that the physiological and biological changes occurring immediately post hatch have a lasting impact on the bird's ability to perform. It is well documented that delayed feed access reduces overall gut weight as well as reducing villi height and crypt depth thus reducing the surface area available for nutrient absorption. Intestinal enzyme activity is also decreased if feed access is delayed, thus reducing digestive efficiency. More recently it has also been shown that satellite cell development is impaired which negatively affects breast meat yield at kill.

immune system primer, selected xylanase enzyme, a trace element package, and a specifically designed natural colourant, all presented on a special kibbled oat.

Primofeed is designed to facilitate a good start for day old birds in order to maximise their long-term growth potential. The components in Primofeed are specifically included in order to:

- Encourage and establishing early feed intake
- Promote gizzard development
- Provide maximum support for the immune system.
- Establish a beneficial gut flora for the starter and grower period
- Support early development of the gut for improved nutrient uptake

Benefits

- Easy and practical to administer
- Attractive and palatable
- Boost early development of gizzard/gut/microflora
- Boosts all stages of immune system
- Reduces early mortality
- Improves nutrient utilisation
- Improves starter intakes
- Improves growth rates
- Improves FCR
- Less reliance on antibiotics
- Improves vaccine uptake



Trial Results

Treatment	No. Birds	Age (Days)	Weight (Kg)	Mortality (%)	FCR	EPEF
Control	71,600	35.8	1.85	1.27	1.66	307
Primofeed	24,600	35.0	1.85	0.52	1.54	345

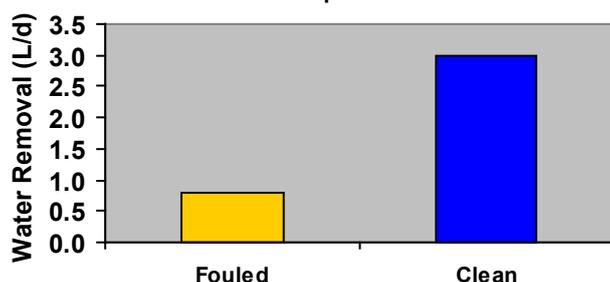
For further information on Primofeed, please contact any member of the poultry team at Devenish Nutrition.

Water – A Forgotten Nutrient?

Mick O' Connell, Pig Nutritionist

In pig production water is normally the cheapest and most readily available nutrient, as well as this, water is also the most critical nutrient for maintaining performance and indeed life. However in spite of its importance, water is often referred to as the forgotten nutrient as it is frequently the nutrient that receives least attention. Water is intimately involved in virtually all metabolic functions as well as comprising almost 70% of the adult animal's body mass. To put the importance of water into perspective an animal can lose practically all of its body fat and over half of its body protein and yet live, however, a loss of just one tenth of its body water will result in death. The role of water in maintaining performance is not just a question of water supply but also and equally importantly of water quality. Recent work carried out on commercial farms by Devenish Nutrition indicates that the quality of ground and surface water is highly variable. The minimum standard that should be applied on farms is that water that is being offered to pigs should be clean, fresh, cool and free of contaminants – essentially farmers should be willing to drink the same water that the pigs are drinking.

Fig 1. Effect of fouling of water bowl on consumption



Water Quality

Pigs might frequently give the impression that they are not overly choosy in their eating and drinking habits however on closer examination, this illusion is dispelled. Research has shown that when given the choice between drinking uncontaminated water from (a) a clean water bowl or (b) a nipple drinker, pigs preferred to drink from a bowl. However, as soon as the water bowl became contaminated with faecal material and stale food, the pigs reduced their consumption from the bowl opting instead for a supply of clean uncontaminated water from the nipple drinker (Fig 1.). This clearly demonstrates that pigs have a definite preference for clean fresh water. Given this depression in water intake due to simple contaminants, it soon becomes

clear that if water is of an unacceptable quality at source, then intake may be affected. It has been well established that where water has a high mineral content or when it contains toxic substances of either mineral, chemical or biological (e.g. algae) origin, pig performance will be depressed. The manner in which water quality affects intake is not however quite as simple as poor quality = reduced intake. In the case of heavily contaminated water, a vicious circle is set up. This is because if the pig initially ingests contaminated water, it will then consume more water to try to detoxify itself eventually leading to the offensive substance building up to a toxic level in the body. Thus it becomes clear that contaminants, depending on what they are may either depress or increase water consumption. Pig producers should have the water on their farm tested routinely to ensure that it is of an acceptable standard for consumption. Suggested water quality guidelines are outlined in table 1.

Table 1. Water Quality Guidelines (ppm)

Total Dissolved Solids	<5000
Calcium	<1000
Nitrates	<100
Nitrites	<10
Sulphates	<1000
Magnesium	<400
Iron	<0.5
Manganese	<0.1
Sodium	<150
Chloride	<400
Aerobic Bacteria (@37°C)	20 / ml
Coliforms	0

Water Delivery

Apart from water quality the rate at which water is delivered to the pig will affect consumption. In the past it had been assumed that a pig ate food and then drank as much water as was needed to metabolise the nutrients ingested. However recent work has shown that the opposite is in fact the case. Research shows that the availability of water influences the amount of water the pig consumes which in turn influences the amount of food it consumes. An interesting feature of pig

behaviour is that pigs do not seem to be prepared to extend the time spent drinking in order to compensate for poor water flow rate. Thus a correlation between water flow rate (availability), water consumption and feed intake is established. The table below demonstrates clearly the relationship between water flow rate and growth. Suggested water flow rates for different classes of pig are as follows: Suckling Piglet - 0.5 L/min; Stage 1 Weaner – 0.5 L/min; Grower – 0.75 L/min; Finishers – 1.2 L/min; Sows and Boars – 3 L/min.

Table 2. Water Flow Rate & Stage 1 Performance

	Water Flow Rate (ml / min)			
	175	350	450	700
Water Intake (L/d)	0.78	1.04	1.32	1.63
Feed Intake (g/d)	303	323	341	347
ADG (g/d)	210	235	250	247
FCR	1.48	1.39	1.37	1.42

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