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Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

Faculty of Veterinary Medicine and Animal Science

LEARN newsletter Nr 3

Livestock Extension And Research Network Newsletter – An initiative from the Faculty of Veterinary Medicine and Animal Science at SLU

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Welcome to the third issue of the LEARN Newsletter! LEARN is a network for exchange of information and identification of new research areas on farm animals. The objective is to cooperate on creating the sustainable agriculture of the future and to strengthen research and innovation within the animal sector.

Participants are researchers at the Swedish University of Agricultural Sciences, the agricultural industry, other universities, authorities and organisations. LEARN offers Swedish and international participants a neutral cooperation platform.

LEARN going international

LEARN Conference November 21st 2012

"Sustainable Animal Production in the Baltic Sea Region" is the theme of the coming LEARN Day Conference.

LEARN Day will take place on November 21st 2012 at the Swedish University of Agricultural Sciences, Uppsala and the Livestock Research Centre at Lövsta-Uppsala. LEARN is going international and researchers, companies, organizations and authorities from countries located within the drainage basin to the Baltic Sea Region will be invited. A grant from the Swedish Institute has made it possible to invite colleagues from Estonia, Latvia, Lithuania, Poland, NW Russia, Belarus and Ukraine. On top of the Swedish colleagues, researchers, companies, organizations and authorities, we are also inviting people from Denmark, Finland and Norway. Sustainable animal production is an extremely important focus for agriculture in our region and an excellent goal to cooperate on within the network. An invitation and programme will be sent out very soon.

Book the day and welcome to the conference in November.

CHRISTINE JAKOBSSON
Senior Project Manager for the LEARN project

PHOTO: PIA OCH KARL NORLING, NIVA

Mussel meal can be an interesting alternative protein source as it has a high protein content and a balanced amino acid pattern for animal growth.

PREMIÈRE FOR LÖVSTA EXPERIMENTS WITH GROWING AND FINISHING PIGS

Inclusion of mussel meal in pig diets

Pi PIG

In mid September the very first experiment with growing/finishing pigs at Lövsta Livestock Research Centre will start. This will be a double première event – the first growing/finishing pig experiment at the new research centre and – to our knowledge - the first experiment with mussel meal in pig diets. This mussel meal is produced from mussel meat only, ie no shells are included. Mussel meal has proved to be an excellent feed ingredient for poultry – what about pigs?

Lysine and threonine have been shown to be the first and second limiting amino acids in cereal-based diets to pigs and both are essential. If the requirements of these amino acids are not fulfilled, performance, health and animal welfare can be negatively influenced. In order to assure an adequate supply of essential amino acids, pure (synthetic) amino acids are added to conventional diets. However, in organic diets such supplementation is not allowed and from 2015, 100% of the ingredients must be organically produced. Today there are a limited number of organically produced protein feedstuffs available to fulfill the pigs' requirement of lysine and threonine.

Mussel meal can be an interesting alternative protein source as it has a high protein content and a balanced amino acid pattern for animal growth. Therefore it has the potential to replace fish meal and other conventional protein feed ingredients in pig diets. Mussels are also extremely good filterers of water being an effective tool to clean sea waters from nitrogen and phosphorus that has leached into the water.

The aim of this study, which is a part of an EU-project (ICOPP), is to investigate the effect of inclusion of mussel meal in diets for growing/finishing pigs of different genotypes. The hypothesis is that pigs will perform well, with maintained production results in terms of growth, feed conversion rate and carcass quality, when mussel meal replaces conventional protein feed resources.

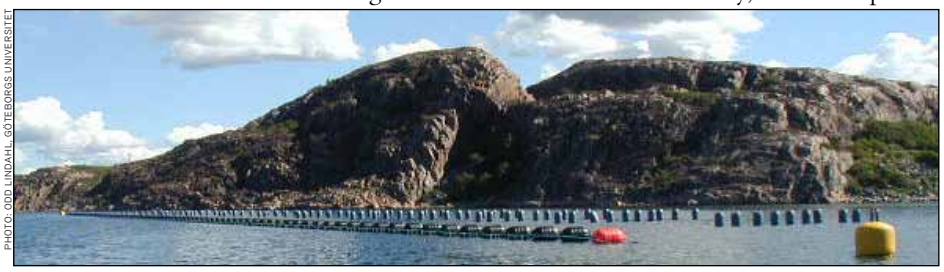

PHOTO: ODD LINDAHL, GÖTEBORGS UNIVERSITET

Mussels are also extremely good filterers of water being an effective tool to clean sea waters from nitrogen and phosphorus.

KRISTINA ANDERSSON AND MARIA NEIL
Department of Animal Nutrition and Management, SLU

Functional Fowls

P POULTRY

Fibres are not digested by fowls, but their impact on digestive physiology and nutrient metabolism can be substantial. A series of nutritional trials at the Livestock Research Centre at Lövsta-Uppsala recently addressed several aspects of fibres in different feeding concepts for broiler chickens and laying hens.

Most prominent in the broiler chicken trials was that the soluble fibre fraction of the diet hampered feed utilization. However, these effects were counteracted by the use of a fibre degrading enzyme in the feed. It was also found that, in contrast to soluble fibre fractions, diets characterized by insoluble fibre tended to improve performance.

Although variations in fibre quality clearly makes a difference to the birds, the analytical methods currently in use fail to discriminate between fibres that we want and fibres that we wish to avoid. This is a future challenge for the actors in the animal feeding sector that are trying to adopt more sophisticated fibre determination methods into their routine analytical packages.

Other results from the series of experiments supported the early notion of a link between the daily intake of fibres and abnormal behaviours in laying hens. Supplementing the daily feed ration with roughage reduced the injuries following feather pecking. In turn, better plumage conditions lowered the maintenance energy requirement, resulting in more efficient feed utilization. Further, it turned out that laying hens consumed substantial amounts of wood shavings, sawdust and pelletted straw, when used as litter substrates. These findings suggest that continuous provision of high quality litter substrates not only influences the wellbeing of laying hens, but also constitute a source of fibre which are of importance to the digestive functions.

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CAN IT BE PROFITABLE?

Milk production on only silage and cereals

The results comparing the two concentrates were similar in both experiments and showed that feeding only cereals and silage gave a lower milk yield, but higher fat and protein contents of the milk.

FEED The present low price of milk and the high price of concentrate feed have put focus on how to decrease feed cost. Especially in organic milk production the costs of protein rich feed components are high. The vast majority of dairy farms produce their own silage and most farms can also cultivate cereals on the farm. Besides being cheaper, feeding a diet of only cereal concentrates and silage thus also has the advantage of making the farmer more independent of the concentrate prices on the market. If profitability can be increased by feeding a diet with only cereals and silage, this would be very interesting.

The objective of the experiments was to compare production of cows that, as complement to silage, were fed only cereal pellets with cows that were fed with a more conventional pellet that also contained protein rich feed components such as soybean and rapeseed products.

In the first experiment we compared the concentrate containing cereals with the protein rich concentrate together with two silages with 17 or 13% crude protein (silage17 and silage 13). Both silages were first cut grass/clover silage with energy contents above 11 MJ/kg dry matter. The idea was that the silage with the higher crude protein content would maintain a higher milk production, especially for the cows given the cereal based concentrate. However, there was no difference in milk production between feeding silage17 compared with silage13. Therefore, only the two concentrate treatments were compared in the second experiment.

The results comparing the two concentrates were similar in both experiments and showed that feeding only cereals and silage gave a lower milk yield, but higher fat and protein contents of the milk. This gave approximately 10% lower energy corrected milk yield (ECM) for the cereal+silage diet. However, calculating the profitability of milk income minus feed cost showed a positive economic outcome for the treatment with only cereals and silage in the diet when using the prices for organic production in Sweden. When using prices for conventional feed and milk the autumn 2012 the economic outcome was the same for the two treatments.

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Different types of roughages will be fed to two breeds of suckler cows in early pregnancy to reduce fattening. This is reed canary grass, one of the crops thats is investigated in the feeding trial.

Sustainable forage feeding of suckler cows

BEEF AND LAMB Indoor feed rations for suckler cows are mainly based on roughage and the cows are usually fed ad libitum for more rational handling. The roughage is often of too high nutritional quality compared to the cows' nutrient requirements. As a result many cows consume more feed than they need. This in turn leads to unnecessary high feed costs, fat cows that may have problems at calving and to environmental losses of especially nitrogen. The problem is most pronounced during early pregnancy when the nutrient requirements of the cows are low. From an economic, environmental and animal welfare perspective there is a lot to win by finding new roughage alternatives that are more suitable for this animal category. This will now be investigated in a new Nordic collaboration project* between SLU Skara and the University of Copenhagen. The project also includes data collection to develop a module for suckler cows in the Nordic Feed evaluation system, NorFor. In 2012 and 2013 two feeding trials will be performed at Götala Beef and Lamb Research Centre SLU in Skara. Different types of roughages, such as silages of grass/clover, reed canary grass and whole crop cereal oats, will be fed to two breeds of suckler cows in early pregnancy. The effects on feed intake, digestibility and rumination time are some parameters that will be studied. In the second trial the effects on calf performance and cost of production will also be included. The aims of the studies are improved feeding recommendations for suckler cows and a more efficient production and use of roughages in cow-calf production.

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*Sustainable forage feeding of suckler cows is part of the Nordic interreg-project REKS, www.reks.nu

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The "index finger test" was used to determine if the cow was shot in the forehead or not.

Characteristics of Swedish dairy cows that died unassisted on farms

VETERINARY

An increasing on-farm mortality rate (from 5.1 to 6.6 events per 100 cow-years) has been demonstrated in Swedish dairy herds during the last decade. It is important to quantify the proportions of euthanasia and unassisted death for animal welfare reasons. To reduce cow mortality rates in Sweden it is neccesary to be able to identify characteristics associated with the two types of death. The proportion of unassisted dead cows among the cows that die on-farm was quantified, and risk factors for unassisted death (as opposed to euthanasia) were identified.

The two main destruction plants in Sweden were visited during three days, three times each in 2011 to 2012. All dairy cows entering the plant were visually inspected to determine if the cow was euthanized or not. Subsequently the farmers that had sent cows to a destruction plant were contacted by telephone to verify cause of death. Information on cow and herd characteristics was retrieved from the Swedish Official Milk Recording Scheme (SOMRS).

The results showed that of the 433 dairy cows enrolled in the SOMRS, and where the examination at destruction plants was in agreement with information from the farmers, 30% had died unassisted. The only cow and herd characteristic that differentiated unassisted death from euthanasia was the herd average stillbirth rate (stillborn calves and calves that died within 24 h after birth). A stillbirth rate above or equal to the median in the study material (6.97%) increased the risk for unassisted death. The proportion of unassisted dead cows was lower in Sweden than in Denmark and the United States. It is appropriate to study euthanasia and unassisted death as one group in Swedish dairy cows, because only one factor differentiating between the two types of death was identified.

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