



**Scottish Farming
Innovation Network**



**Soil Association
Scotland**



*Supported by the Duchy Originals
Future Farming Programme*



FIELD LAB REPORT: Feeding Silage to Pigs

Meeting 1 – Tuesday 10th June 2014

The pig field lab will run until the end of 2014, and will look at the potential of silage to help maintain good liveweight gain, improve carcass quality, improve gut health, and reduce the cost and environmental impacts associated with feeding imported soya.

Ancestors of our modern pigs met much of their nutritional requirements from vegetation and invertebrates in their environment (which are relatively high in omega-3 fatty acids), whereas today we rely on grain and, to some extent, imported soya and other oilseed meals - hence the high levels of omega-6 fats in pork today. There is evidence that diet manipulation in pigs, by the reduction in supplementary protein, can encourage foraging behaviour, as pigs are naturally foragers and will seek out high protein foods in their wider environment. The hypothesis for this project is: if we can encourage pigs to forage on the range (or consume silage in the winter), we can reduce the need for costly supplementation as well as enhancing food quality and animal welfare standards.



Although there is anecdotal evidence that pigs thrive on silage, there is currently limited research available on this topic. Therefore this field lab will make a genuine contribution to current scientific understanding and could inform further research on the subject.

The first meeting took place at [Peelham Farm](#) on Tuesday 10th June, and was attended by 7 farmers and a chef. Peelham is a 650 acre mixed organic holding in Berwickshire run by Chris and Denise

Walton, and consists of arable, beef cattle, sheep and pig enterprises. The farm is split into two blocks, with the better ground used for growing cereals and silage on a (?)6 year rotation with 2 years of clover and the poorer areas are grazed. Pigs are used for stubble weed control in the winter on a 5 year rotation. The farm has been organic for 8 years and has evolved into a system that produces finished animals all year round. There are currently 2 SRDP projects on the farm for tree planting, which has contributed to the infrastructure of the farm.



Newcastle University Researcher Gillian Butler started the meeting by outlining the background to the field lab, and what she and host farmer Chris Walton envisaged for the trial. There is some information available suggesting that dry sows do well on a diet that includes silage, and that they will forage for protein in the range if there is not enough present in the diet. This has also been shown for poultry, with evidence that egg production tends to take an initial dip and then rise again to pre-change levels. However with pigs there may be a risk associated with economising on feed, relating to the negative impact on feed conversion if amino acid levels are insufficient. It was suggested that a high-clover silage with legumes in the form of home-grown peas and beans may match amino acid and protein intake to the needs of a slower growing breed such as the Tamworth (which will be used in this trial). There was also some discussion around the protein content of different crops which may be produced at home, especially lupins, oats, arable silage, dried and crimped peas and beans, and oilseed rape.

The study will involve the comparison of two groups of ~60 weaners over 18 weeks; one being fed Peelham's standard ration of beans with wheat or barley, and the other with a reduced ration and chopped baled red clover silage on an ad-lib basis. A control group is necessary to make the trial robust, and the groups will be 'paired' as closely as possible – i.e. weaners with similar mothers and traits will be in each group so that variation between groups is minimised.



The group discussed at some length which variables should be measured during the trial, as well as what was practical to carry out within the constraints of a busy farming enterprise. As well as calculating the cost of silage production, faecal egg counts and pig liveweight will be measured at the start, middle and end of the trial, as will feed quality analyses. Samples will also be taken from each batch of silage throughout the trail and analysed for nutrient quality. Each bale will be weighed, and a visual assessment recorded of

how quickly it is eaten to allow an estimate of intake. At the end of the trial it was suggested that total pig liveweight gain is calculated, deadweight recorded, fat analyses carried out for a sample of carcasses and also gut analyses, which would include stomach parasites and gut length. It was also

suggested that any change in fat quality may reflect changes in Omega-3 and therefore impact on meat flavour; and the group discussed including a taste comparison at the end of the trial.

Farmer Chris Walton said that he hoped to show that using home-grown silage would provide multiple benefits, including cost benefits and environmental sustainability, especially from reducing bought-in concentrates. The group agreed that whatever the result of the trial was that we would gain valuable insights from the experience.

The group then enjoyed a walk around the outdoor pig rearing areas and further discussed the practicalities of rearing pigs, how the logistics of the trial might work, next steps and what might be discussed at the next meeting.

The second meeting of this field lab will take place on Thursday 14th August 2014, and is open to all who are interested. You can find further details on [our website](#).

For more information or to book a place please contact Colleen McCulloch at cmcculloch@soilassociation.org or call 0131-666-2474.



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