Aim of the breeding research in LIB-SP3 and the methods to be used.

Jan Merks.

'Low input' pig production systems are usually characterised by smaller herd size, more space per animal, lower capital investment, often outdoor management, provision of bedding, greater labour requirement and focus on animal welfare. Examples of 'low input' pig production systems are "Iberico" in Spain, "Neuland" pigs in Germany, "Scharrelvarkens" in The Netherlands, "Natura Farm" in Switzerland, "Label Rouge" in France and "Freedom Food" in United Kingdom.

Organic pig production systems have similar characteristics to those described for 'low input systems' above. However, organic farming standards prescribe e.g. low stocking densities, access to outdoor runs, restrict the level of 'bought in, non-organic' feeds etc, which usually results in higher management and feed costs and more limited dietary composition choices than in other 'low input' systems.

The main issues that are addressed in LIB for pigs are:
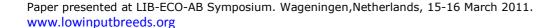
- <u>Lack of appropriate breeding infrastructure for the 'low input' sector</u> In conventional pig production, cross-breeding has been widely used since the 70's. Such cross-breeding systems are not available for organic or low input production.
- <u>Piglet survival</u> and associated traits, e.g. piglet losses until weaning 20% on organic and 12% on conventional farms.
- <u>Abiotic stress factors</u> in particular heat stress, e.g. pigs raised in outdoor production systems are often exposed to greater challenges by both abiotic and biotic stress factors, that adversely affect production.
- <u>Nutritional and sensory quality</u> of pig meat affected by (a) breed/genotype and (b) dietary regimes.

These issues are addressed along 3 Workpackages:

› WP3.1 Development of a flower breeding system to improve pig survival and robustness related traits in small populations
› WP3.2 Development of management innovations (gilt rearing and lactation systems) on mothering ability of sows and losses of piglets
› WP3.3 Effect of traditional, improved and standard hybrid pig genotypes and feeding regimes on carcass, meat and fat quality

Along these WP's, the partners in SP3 want to achieve:
1. Indication of European breeds/genotypes that show the "best" performance (with respect to desired robustness, animal health and

welfare and product quality traits while economically competitive) under 'low input' conditions.
2. To quantify to what extent and what kind of specific breeding programmes are needed, e.g. "Flower Breeding programs" for (a) different types of organic and 'low input' production systems (b) different macro-climatic/geographic regions in Europe and (c) to reduce piglet and finisher mortality.
3. Gilt rearing system(s) and piglet environment during lactation that suit best for the health and welfare and productivity of pigs in 'low input' systems.
4. Determine the effects of breed/genotype (traditional and modern breeds/genotypes and crosses between modern and traditional breeds/genotypes) and different feeding regimes on performance, carcass quality as well ass nutritional and sensory quality aspects of fresh and processed (sausage) pork characteristics.
5. Determine the effect of pig genotypes and feeding regimes on nutritional and/or sensory quality characteristics of pork meat in 3 different macro-climatic zones organic and 'low input' systems in D, ES and UK

These results are achieved along a combination of experimental and desk (literature and model analysis) research. Traditional selection and breeding methods are used for the achievements 1 and 2, while for the other achievements use is made of available genetics. Only for parental identification of died pigs (part achievement 2), SNP technology is used.

For the optimisation of 1 and 2, the actual breeding goals, based on mainly economic values, are used. The economic values are determined by the actual prices for labour, feed, housing etc in the region where the breeds are selected and maintained.