P24.12 email: hlu@suisag.ch

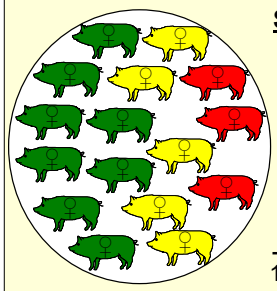
A selection strategy for nucleus gilts to optimize genetic gain and the increase of relationship in the Swiss pig breeding program

SUISAG H. Luther and A. Hofer, SUISAG, CH-6204 Sempach, Switzerland

Summary

Especially in small nucleus populations, it is important to control the increase of relationship to preserve genetic diversity. Thus, nucleus breeders should use gilts with high breeding values and/or few relatives within the nucleus population for female replacements of their own herd. SUISAG develops an adapted selection index to select such gilts after the on-farm tests and to recommend them to the breeders immediately. The index will combine the total breeding value and the average relationship of the animal to the nucleus population. This poster presents the planned implementation.

1. On-farm test



Suitability of the gilt		recommendations
8 fully suitable	➡ or	use for replacement sell to multiplier herds
5 provisory suitable	➡ or	sell to multiplier herds cull the gilt (slaughter)
3 not suitable	➡	cull the gilt (slaughter)
16 tested gilts		

Data entry at the same or subsequent day

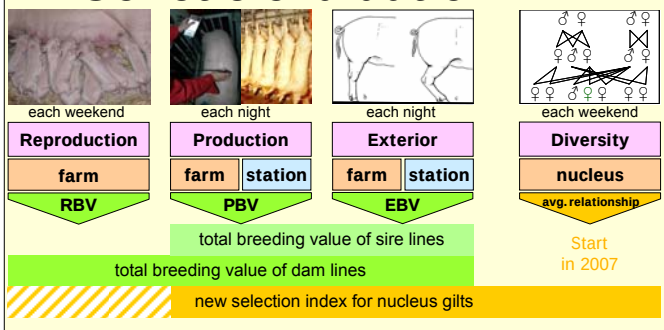
Swiss nucleus breeders perform tests in intervals of 2-4 weeks. The animals must have a weight of 80-120kg.

Gilts will be classified into three groups according to:

- some minimum criteria of the Swiss linear description system of exterior traits (e.g. ≥7/6 teats, no inverted teats, etc.)
- some minimum breeding values (e.g. TBV, PBV, RBV: ≥ 80)
- the classification given during the on-farm test. Breeders have the option to classify gilts with exterior deficiencies as “provisory” or “not suitable”. These gilts will not be selected as replacements.

The aim is to exclude gilts with single, extremely negative attributes and to take the breeder’s opinion into account.

2. Genetic evaluation



Information to breeders as soon as possible

SUISAG performs the Swiss genetic evaluation for pigs since 1998. The total breeding value (TBV) includes data of three trait groups. BV are combined according to economical weights in dam and sire lines.

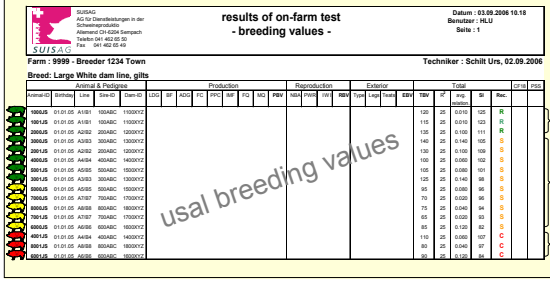
SUISAG estimates breeding values of production and exterior traits each night to provide actual values based on the own performance of the young animals immediately after the on-farm tests.

Using software based on the optimal contribution theory (e.g. GENCONT) would be the best way to select animals optimizing genetic gain and the rate of inbreeding. But GENCONT needs too much computation time.

Therefore, SUISAG will start to calculate the average relationship of an animal to the complete active nucleus population once a week to identify animals with few relatives.

A new selection index will combine the TBV and average relationship to favour animals with high breeding values and/or few relatives. The weights of both parts will be derived in such a way, that preferably similar animals will be selected as with GENCONT.

3. Recommendations



	use for replacement
-or	sell to multiplier herds cull the gilt (slaughter)
	cull the gilt (slaughter)

As today, the results of the genetic evaluation and new recommendations will be available on the internet and sent by mail the next morning.

The number of recommended gilts will allow a replacement rate of 60% per year.

If several adequate full-sisters are tested in a batch, SUISAG will recommend the best of them for replacement of the nucleus herd. In very good litters we will recommend the second best sister also.

Nucleus breeders obtain a clear recommendation which gilts they should use for replacements (R), which gilts should be sold (S) and which gilts have to be culled (C).