In addition to conventional selection criteria like egg production, feed conversion and egg quality, traits related to animal welfare have become more important in Europe and North America. To improve these traits and simultaneously capture performance data in non-cage environments hen-specifically, the Weihenstephan Funnel Nest Box (FNB) was developed. The FNB captures egg production and egg quality data individually as well as nesting behaviour traits. A comparison of performance parameters from full siblings, tested in single bird cages and the FNB, lead back to potential genotype environment interactions that will determine which testing system should be mainly used in future for continuous improvement of egg production and egg quality. Low genetic correlations between full siblings, tested in varying housing systems, were estimated for the egg number during the main laying periods. Otherwise, high genetic correlations and therefore, no potential genotype environment interactions could be assumed for the traits egg weight and egg number at the beginning of production. An additional breeding tool which has the potential to improve selection traits, regardless of the housing system, is genome wide selection. Therefore, phenotypic performance recording must first be established for new traits before markers can be applied. Due to all these assumed effects, a comprehensive performance testing with an evaluation of birds, consequent selection and reproduction of the best layers, layer breeding companies should implemented hen-specific tests in non-cage systems in their breeding program.