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“Bridging the gap between increasing knowledge and decreasing resources”

Security Issues, Protection and ISO Certification of the Genetic Improvement Program

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Abstract

Part or all of the breeding company operation is to be ISO certified. The ISO standards for documentation and repeatability are exactly what will be required when breeding company begins to sell genetic products (e.g. fry or fingerlings) on the basis of a proven and repeatable improvement in performance. This will enable the breeding company to demonstrate the reliability of its statistical analyses as well as of the data themselves. The objective should be to make it as easy as possible for a person to exercise professional “due diligence” when buying genetic products for the breeding company or calculating the value of the breeding genetics programme as a corporate asset. There have to be security issues and protection of the breeding company strains. For physically protecting the strains, the inbred lines can be protected against unauthorised reproduction by distributing only the F1 hybrids between two or more lines. Furthermore, the hybrids will be hormonally sex reversed. If the hybrids are reproduced by a “hijacker” the resulting F2 generation will be less uniform and generally inferior to their parents both in form and in growth rate. However, the breeding company has to maintain very high biosecurity over its pure males and females lines. For legal protection and registration, the legal procedure for officially registering or patenting a new genetic variety requires a demonstration of the uniqueness, stability and uniformity of the variety. DNA markers can be used for this purpose and the number of DNA marker loci developed for tilapia is more than adequate. However, it will be necessary to collect DNA samples from every generation of breeders and store them in a safe place even if there is no immediate plan to analyse them. In this context it is important to accumulate DNA samples and data each generation. Since marker systems keep changing and are to some extent dependent on the company that does the genetic analysis, it is important for the breeding company to keep DNA samples of its own, on its own premises, for later analysis.

Keywords: Breeding program, DNA markers, security issues, strain protection, tilapia