

Breeding Technology in Turkeys



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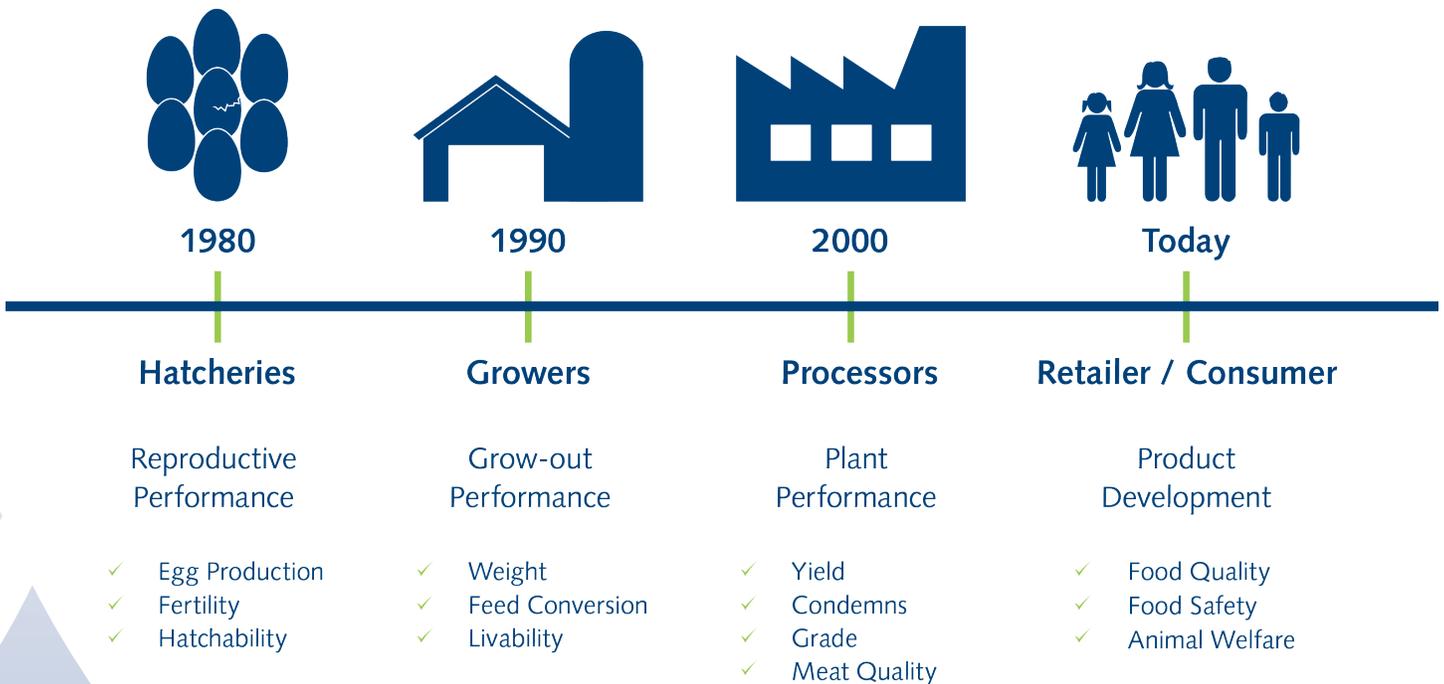
BREEDING TECHNOLOGY IN TURKEYS

Being one of the smaller livestock species doesn't mean that modern breeding technologies are not being applied in turkey breeding programs. Annual turnover, at the parent stock level, is only a fraction of what other protein sources see. This just means that turkey geneticists have to keep a close eye on developments in breeding technology within other (protein) species (beef cattle, pigs and broilers).

History of Turkey Breeding

Primary turkey breeding companies have been around since the early 1950s. At this time hybridization schedules were introduced and specialized lines were developed; making use of the variety of turkey breeds that were available. Through a combination of 3 or 4 different genetic lines, a product was created that would meet the demands of the turkey industry (the breeding goal).

History of Turkey Breeding



In the beginning, the industry mostly consisted of independent hatcheries, growers and processors. Over time, this has evolved to more integrated turkey operations, and alignment or take-over of independent hatcheries by the primary breeders.

As a consequence of these industry changes, the breeding goal has gone through some dramatic changes as well.

In the early fifties, the focus was on the production of poult. Over time, this focus has shifted to low cost, high quality breast meat yield in the processing plant. The increasing importance of animal welfare, food safety and the environment (carbon footprint) are having an impact on turkey genetics as well.

Methods Of Selection

In order to stay competitive, changes to the breeding goal has required changes to the applied breeding technology.

- Mass selection has been replaced by pedigree systems (trapnesting) in order to include family information.
- Testing systems for tracking feed intake in individual cages have been replaced by group housing systems with RFID technology to capture feed conversion information under the right (commercial) conditions.
- With regards to breast meat yield; early practices focused on correlated responses to body weight. This has shifted to conformation scoring, direct information on yield tests from siblings as well as yield information on the live turkey through ultrasound technology (see Fig. 1–4).

In terms of statistical analysis of available data, traditional selection index methodology was replaced by animal model—BLUP technology—in the mid 1990s. The advantages of these technologies in turkey breeding are

fewer, compared to other species, due to testing in mostly a limited number of well-controlled environments as well as selection within contemporary groups. Increased accuracies, nevertheless, made it feasible to implement animal model methodology in turkey genetics programs.

Conclusion

The next development in turkey breeding programs is the use of Single Nucleotide Polymorphism (SNP) technology for genome-wide marker-assisted selection (GMAS). Although efforts are underway, this technology is not yet available for turkey breeders. Until then, turkey geneticists can only learn from experiences obtained in cattle, pig and other poultry species. As one of only two breeders of turkeys in the world, it is important to note that Hybrid Turkeys is part of Hendrix Genetics, a multi-species breeding company. This gives Hybrid the opportunity to learn from breeding applications in Hybrid's sister companies in pig, layer and salmon breeding.



Figure 1
Body Weight Testing



Figure 2
Conformation Scoring



Figure 3
Breast Meat Yield Tests



Figure 4
Ultrasound Technology

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The information contained herein is a recommendation only and may differ by geographic region. The intent of this information sheet is to assist in improving turkey production.

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