

# New software supports decision-making for animal and plant breeders

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A team of researchers at the University of Göttingen has developed an innovative software program for the simulation of breeding programs. The Modular Breeding Program Simulator (MoBPS) enables the simulation of highly complex animal and plant breeding programs and is designed to assist breeders in everyday decision-making. Furthermore, the program is intended to be a cornerstone for further studies in breeding research in Göttingen. In addition to purely economic criteria in breeding, the research team is striving for goals such as sustainability,

conservation of genetic diversity and improved animal welfare. The software was presented in the journal *G3: Genes, Genomes, Genetics*.

"By simulating breeding programs, conclusions can be drawn about genetic improvements," says Torsten Pook from the Centre for Integrated Breeding Research (Cibreed) at the University of Göttingen. "In fact, potentially problematic issues such as inbreeding or adverse effects on the health of the animals can also be identified at an early stage." Pook is the main developer of MoBPS. The software offers opportunities to realistically model common processes in breeding such as selection, reproduction and data collection (e.g., DNA information, trait observations). At the same time, it can simulate millions of matings of [animals](#) with certain features in just a few minutes.

"From the simulation of simple maize-breeding programs to increased consideration of bone stability in horse breeding, and the simulated development of red deer populations in Baden-Württemberg over the last 200 years, everything has been done," said Pook. The next goal of the research team is to develop an additional module for MoBPS that can automatically optimize breeding programs with a large number of variables and under given constraints.

**More information:** Torsten Pook et al, MoBPS - Modular Breeding Program Simulator, *G3: Genes|Genomes|Genetics* (2020). [DOI: 10.1534/g3.120.401193](https://doi.org/10.1534/g3.120.401193)

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