

Breeding insects for food and feed

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Insects have a large potential for sustainably enhancing global food and feed production, and commercial insect production is a rising industry of high economic value. Insects suitable for production typically have fast growth, short generation time, efficient nutrient utilization, high reproductive potential, and thrive at high density. Therefore, insects can cost-efficiently convert agricultural and industrial waste and by-products into valuable protein once the technology is fine-tuned. However, since insect mass production is a new industry, the technology needed to efficiently farm these animals is still in a starting phase. Here, we discuss challenges and opportunities to be considered when breeding and maintaining high-quality insect populations for food and feed. In a joint effort between industry and university partners, in Denmark, United States and several African countries we work on providing knowhow needed to optimize production of high-quality protein based on insects through breeding. We argue that there is an enormous and unutilized potential to do this by genetic improvement which has been successfully utilized/applied in traditional livestock species for decades. In ongoing projects, we work with house flies and black soldier flies aiming at developing sustainable breeding programs for those species, performing selection for important production traits, and assessing regions of the genome explaining variation in traits of interest.