Inbreeding among cattle deserves attention

'With DNA data you can pinpoint kinship and inbreeding more precisely'

Kinship and inbreeding in Holstein Friesian bulls have been increasing fast in recent years, PhD student Harmen Doekes has ascertained. Thanks to targeted pairing, inbreeding among the cows has not increased so much. He advises safeguarding genetic diversity.

Most of the dairy cows in the Netherlands are of the Holstein Friesian breed. Livestock farmers use a select group of AI bulls for artificial insemination that produces calves with useful traits. Doekes studied kinship and diversity among AI bulls born between 1986 and 2015, using DNA markers.

Inbreeding is problematic if it happens at the expense of the productivity and health of the cows. That is then known as inbreeding depression. The level of inbreeding depression is negligible at the moment in comparison with the genetic progress, says Doekes. Because of the genetic progress, today's cows produce more milk, are more fertile and have healthier udders than the cows of 10 to 20 years ago.

But diversity still deserves attention, says the PhD student, now that it has become clear that kinship and inbreeding have increased faster in the past 10 years. He established the kinship between the bulls with the aid of 75,000 DNA markers. This method is more precise that the old calculation method using a pedigree. 'With a pedigree, you assume that a calf gets 50 per cent of its genetic material from the father and 50 per cent from the mother, but you don't know exactly which 50 per cent. With DNA data, you do know this and you can pinpoint kinship and inbreeding more precisely.'

Doekes advises breeders to monitor kinship and inbreeding at the DNA level and to limit it through their selection of bulls. AS

['China plants forests like it puts up buildings: fast, efficiently and on a grand scale.'

WUR environmental policy expert Annah Zhu in the newspaper *NRC Next* on the emergence of China as a key player in global environmental negotiations.]