Socio-economic drivers of farmer participation in livestock breeding for heat tolerance

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Despite the potential of breeding to improve livestock adaptation to CC, farmers' willingness to select for heat tolerance (HT), and the socioeconomic factors influencing it, are largely unknown. This study aims to identify the socioeconomic drivers of dairy farmer's attitude towards breeding for HT in Spain so that such breeding scheme is enhanced by high farmer participation. We performed a survey-based choice experiment in which farmers were asked to choose one among four potential breeding schemes (stressing the trade-off between milk production and HT): (1) remain breeding as currently; (2) moderate HT focus; (3) intensive HT focus; (4) HT prioritization. The survey also gathered information about farmer and farm profiles and about attitudes towards CC, breeding tools and HS on-farm impact. 38 Holstein-Friesian cattle, 43 Manchega sheep and 41 Florida goat farmers were interviewed. Answers were analysed using multinomial logistic regression models. Most farmers believe that CC is happening although half of them think that it is due to both natural and human factors. Nevertheless, most farmers show concern about its impact on their farms. HS on-farm impact is perceived as more severe by cattle farmers than sheep and goat farmers but all agree that more should be done to adapt farms to reduce animals' HS. However, 50 and 25% of the dairy cattle and small ruminant farmers, respectively, would not include HT in their breeding goal. The rest mostly favoured a moderate selection on HT. Farmer and farm profiles (except for farmer's age) and general attitudes toward CC did not show significant effects on willingness to select for HT. Only perception about on-farm impact of CC and HS, and positive attitudes towards breeding tools influenced positively farmers' willingness to select for HT. Finally, our study shows how farmers' attitudes towards HT selection many times stem from biased knowledge of HS impact on animal performance and a biased view of the utility of breeding tools.