Simple phenotypic indexes can bring data recording to life for smallholder farmers

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Community Based Breeding Programs (CBBP) which facilitate genetic improvement of livestock in smallholder systems have been impactful in Africa for many years. More recently, effort is being made to initiate CBBPs for women goat keepers in India, with a project established in the state of Bihar in 2018. In 2024, two new CBBPs were initiated in the Aravali hills region of Rajasthan and Gujarat states of India.

Enumerators and women goat keeping specialists called pashu sakhis facilitate data capture into the DTREO cloud-based database system as a key CBBP activity. The data captured allows project activity to be monitored in very close to real time while also generating valuable data on the performance of the local breeds in different villages and regions while both genetic and husbandry improvements are undertaken.

More importantly though, if the data recording can identify fast growing young male kids from desirable healthy does with region-appropriate litter sizes, there is a possibility to provide the opportunity of reward through purchase of these male kids to go on to become breeding bucks. Ideally, these elite breeding bucks are established at least 20km distant from their birth village and transferred to new villages every 12 months to avoid mating of close relatives.

Because each smallholder often owns a small number of each livestock class, it is not practical to undertake complex multi-trait BLUP genetic evaluations. Instead, we have developed simple metrics that convert sequential kid weights into growth rate scores which are then integrated with additional trait scores based on characteristics of the kids' mothers (e.g. litter size and kid survival history, health, size, milk supply and desirability). Aggregated scores available prior to normal castration age then facilitate breeding buck selection. This paper describes our experience with and ongoing plans to deploy simple phenotypic scores for breeding buck selection in the CBBPs in Rajasthan and Gujarat.

Keywords: CBBP, database, selection.