The impact of genomic selection on the South African dairy breeding sector

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Genomic selection is being adopted rapidly in breeding programmes worldwide. This paper discusses the influence that genomic selection has had on the South African dairy breeding sector. Although it is yet to be implemented, genomic selection has undoubtedly been the most topical subject in the South African breeding fraternity in recent years. Unfortunately, however, excitement about the new technology overwhelmed any efforts to educate industry about how genomic selection works and the extent to which benefits accrue to the various sectors. There was a wide-spread misconception that genomically tested means superior breeding value. Some farmers, gripped by fever of the new technology, spent large amounts of money on DNA tests for commercial marker panels. This was despite a lack of knowledge of how accurately these tests predict breeding values. Companies providing such tests quickly cashed in on this frenzy. Foreign AI companies also capitalised by pushing up sales of semen of genomically tested sires, without any regard to genotype by environment interaction. This unduly disadvantaged local sires and adversely affected the business of local AI companies. Breed societies, believing that implementation of genomic selection would put their breeds ahead of the pack, made frantic efforts to get service providers to provide genomic EBVs. Any efforts by research and academic institutions to respond to this need were however stymied by the large financial investments required to implement genomic selection. Realising the importance of a concerted approach to genomic selection, scientists and industry came together and formed a genomics consortium. The consortium is spearheading efforts to implement genomic selection programmes in the country, particularly the sourcing of funds. Government funding agencies are gradually buying into the technology and prospects of financial support are now bright. The co-opetition among industry players, brought about by the genomics consortium, is unprecedented in the South African livestock industry.

Genomic selection in dairy cattle: opportunities and challenges for Brazil

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Most semen of Holstein cattle used by dairy farmers in Brazil is imported, but they have not relied on international bull rankings because Brazil is not an Interbull member. Joining Interbull is a major goal in order to evaluate imported bulls in Brazil. A common challenge with genomic selection is to obtain high reliabilities for genomic breeding values from larger reference populations. Building on north and south hemispheres collaboration, genomic selection could radically transform cattle genetic improvement in the tropics. Embrapa Dairy Cattle has played a key role in running genetic evaluations of dairy cattle in Brazil, in collaboration with breeder associations and the AI industry. Integration with international organizations is undertaken by a project involving collaboration with European scientists from key institutional partners. This initiative includes the development of a R&D agenda to align genetic evaluation procedures to facilitate affiliation to Interbull and design strategies to apply genomic selection in Holstein cattle in Brazil. The strategic objectives focus on capacity building in genetic and genomic evaluations; exchange of genotypes with partners and development of collaborative research by effective networking. The expected outcomes are the implementation of a sustainable breeding program of Holstein cattle by selection of local and international bulls evaluated in Brazilian environments and the integration of Brazil in the international set-up of knowledge transfer and scientific collaboration. We will illustrate these points through examples, advocating a network of excellence for the improvement of efficiency and competitiveness of dairy cattle breeding in Brazil.

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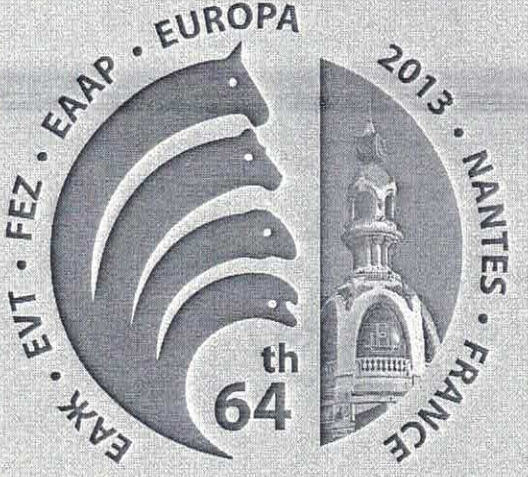

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