



## **8. Supporting Circular Economy: How Does it Affect the Breeding Goals?**

### **Title presentation**

Feed intake recording at commercial dairy farms to breed efficient and healthy dairy cows

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### **Abstract**

Whilst dairy farming systems around the world are hugely different, there is a very good consistency in breeding goals of farmers. Almost regardless of climate conditions and feed rations, most farmers are aiming to breed healthy and efficient cows, i.e. healthy cows that can easily convert feed into high value milk across their lifetime. Selection of bulls and cows based on their breeding values has greatly improved many production, conformation, and health traits. The economic importance of feed efficiency is undisputed as on most farms feed cost are more than half the total cost price per liter of milk. Direct selection for feed efficiency, however, has been difficult as feed intake of individual cows is not routinely recorded on commercial dairy farms. This has changed in the last decade as it is now possible to calculate genomic breeding values for feed efficiency based on a genomic reference population of a thousands of genotyped cows on farms where individual feed intake is recorded daily. Already since the 1990's feed intake has been recorded on research stations from universities and feed companies. Initiated in 2017, CRV now also records individual feed intake at 5 commercial dairy farms in the Netherlands. These farms together have 2000 lactating cows. Wageningen Livestock Research and CRV have developed genomic evaluations for feed intake which are now available for all genomically tested bulls, heifers and cows. Other traits like feed efficiency, and feed saved have been developed since then and are integrated in the total merit index. Based on actual cow data from commercial farms we can now show that the 25% best cows for feed efficiency, as compared to the bottom 25%, produce almost 10 kg more milk per day (FPCM) from the same amount of feed. This equates to 30-40% higher revenue from the same feed costs. Besides its economic importance, breeding for lifetime feed efficiency will also reduce the carbon foot print of milk production and improve the use of land, water and other resources to produce milk. Topics for further research is underway to study genotype by environment interaction with difference feed systems, e.g. pasture-based feeding, and the relation to methane emission.