

Reducing N leaching by adapting N application timing and quantities to weather and grass growthL. Bonnard^{1,2}, E. Ruelle², M. O'Donovan², M. Murphy¹ and L. Delaby³¹MTU, Department of Process, Energy and Transport Engineering, Cork, Ireland, ²Teagasc, Animal & Grassland Research and Innovation Centre, Moorepark, Fermoy, Cork, Ireland, ³INRAE, Institut Agro, PEGASE, Saint-Gilles, 35590, France; laetitia.bonnard@teagasc.ie

The EU Green Deal Farm to Fork strategy has set a target to reduce nutrient losses by at least 50% and fertilizer use by at least 20% by 2030. This will require more appropriate management of Nitrogen (N) fertilizer increasing N use efficiency leading to a reduction of N available for loss. A modelling exercise has been conducted, using the MoSt GG model, to highlight the potential for N precision management to reduce N leaching. Four scenarios were simulated over 19 years (2003 to 2021) using weather data recorded by the Met Eireann synoptic weather station, located in Moorepark Co. Cork, Ireland. The base fertilizer application had a total annual N fertilisation of 225 kg N/ha/yr. Then, the following rules were set to adjust the timing and quantity of the fertilisation: The N application had to be delayed if (1) the average temperature recorded over the preceding and/or the coming week dropped below 5 °C, (2) heavy rainfall occurred in the four preceding days or if it was expected in the three coming days, (3) from April onwards, if the predicted grass growth for the following week was below 30 kg DM/ha/d, fertilisation was cancelled. In each case, if the N application was delayed by more than seven days, the N application was reduced (or even cancelled if over 21 days). For each scenario, four paddocks cut every four weeks in rotation with a total of 10 cuts/yr/paddock were simulated. The precision N management led to an average reduction in N leaching of 3%, associated with an average reduction of 10 kg of N applied/ha/yr and a grass dry matter (DM) yield decrease of 1%. While the highest impact on the amount of N leached was the weather (yearly effect), the positive impact of precision fertilizer application has been shown on specific years. In 2014, for example, the N leaching decrease of 7% with 5 kg DM less grass produced. The years with the greatest N leaching reduction due to the reduction of N applied are often associated with a loss of grass DM production, highlighting that trade-offs will have to be found.

Session 17

Theatre 8

Reducing greenhouse gases in dairy cattle farming through innovative technologies

A. Svitojus and E. Gedgaudas

Chamber of Agriculture of the Republic of Lithuania, K. Donelaičio g. 2, 44239, Lithuania; arunas_svitojus@yahoo.com

The presentation will provide an overview of the situation of Lithuanian dairy farms, the capacity of the Lithuanian dairy industry, and the volume of milk produced in Lithuania and its imports from other countries. Information will be provided on milk purchase prices in Lithuania – the different prices paid for raw milk to small and medium-sized dairy producers and large dairy producers. It will also provide information on the average milk procurement prices in the EU in 2022 and the average milk procurement prices in Lithuania. Information will be provided on changes in prices of dairy products sold by Lithuanian dairy companies, structural changes in dairy farms, the main indicators of milk production in Lithuania and the situation of co-operation, as well as measures to reduce the greenhouse effect and increase milk profitability. One of the way to reduce the greenhouse effect is milk production. Lithuanian dairy farms include in selection programs bulls with high milk production indexes, health traits, longevity. In Lithuanian we increase milk production from 5,601 kg in 2017 until 6,425 in 2021 per cow and we still have a lot potential. Farmers have big interest in female sexed semen and beef on dairies management technology.