Cropping system diversity is an important aspect of agricultural sustainability. This is especially true in Wisconsin dairy systems where farmers seek forage and grain options that can potentially minimize nutrient loss and erosion over winter months and provide land for summer manure applications. Hybrid rye is a relatively new alternative crop option; however, we lack basic agronomic recommendations for our farmers. Two studies were conducted in Wisconsin to evaluate the nitrogen needs of hybrid rye. Studies were a split-plot design with four replications. Two varieties (KWS Propower and KWS Serafino) were fertilized at four fall (0, 17, 34, 50 kg N ha$^{-1}$) and six spring (0, 34, 67, 101, 135, 168 kg N ha$^{-1}$) nitrogen rates. Trials were established in September 2020. One study evaluated nitrogen needs for forage production and the other for grain production. The forage trial was harvested at Feekes 10.1 in May 2021 and the grain trial at Feekes 11.4 in July 2021. The ‘lmer’ package in R was used for linear regression. Both fall and spring nitrogen had a significant impact on forage yield, with yields increasing as nitrogen rates increase. Results of grain yields were similar, although there was a stronger yield response to spring nitrogen application in treatments receiving no fall nitrogen. When compared to other forage and grain crops in Wisconsin, hybrid rye yields were comparable or better. Data on forage and grain yield and quality will be presented. These trials will be repeated at two locations in 2022 and data will be used to create preliminary nitrogen management guidelines for hybrid rye.

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