The OBXII model applied to carbon dioxide concentration data in grasses *Echinochloa crus-galli*

José Nilton da Cruz [1], **Marcelino Alves Rosa de Pascoa** [2], **Juliano Bortolini** [3], **Elianara Martins de Almeida** [4], **Anderson Castro Soares de Oliveira** [5]

Abstract: *In this work was proposed an extension of the Burr XII distribution, the Odd Burr XII distribution, which allows the modeling of bimodal data, as well as being used in situations where the risk function accommodates unimodal forms and U (bath). It was used non-censored data, considering the maximum likelihood estimators to fit the proposed model in order to verify the flexibility of the OBXII model. Also, was constructed confidence intervals and obtained the statistics for comparison of models, AIC, AICC and BIC. Subsequently, as the confirmatory analysis, the likelihood ratio test (TRV) was used. Finally, after the adjustments, obtained the estimates, constructed the graphs with the adjusted functions of the models and realized the TRV, it was observed that the OBXII model was better adjusted to the actual data of CO2 concentrations. Thus, the OBXII distribution emerges as a new model capable of making the Burr XII distribution even more flexible and useful in situations where the most usual models fail to capture more pronounced asymmetries and adverse data behaviors, namely bimodal.*

Keywords: "T-X" family; Odd Burr XII distribution; skewness; Newton-Raphson.

[1]Universidade Federal de Mato Grosso. e-mail: *niltonn.cruz@gmail.com*
[2]Universidade Federal de Mato Grosso. e-mail: *marcelino.pascoa@gmail.com*
[3]Universidade Federal de Mato Grosso. e-mail: *julianobortolini@gmail.com*
[4]Universidade Federal de Mato Grosso. e-mail: *martinsnaraa@gmail.com*
[5]Universidade Federal de Mato Grosso. e-mail: *andersoncso@gmail.com*