

SEQUENTIAL BAYESIAN ESTIMATION APPLIED TO PROPORTION FROM PSYLLID INFESTATION IN THE ROSEMARY FIELD

Carla Regina Guimarães BRIGHENTI¹
Mariana RESENDE¹
Deodoro Magno BRIGHENTI²

- **ABSTRACT:** In sequential Bayesian analysis the observations are sequentially taken and must stop the sampling on the observation that the expected posteriori risk is higher than the immediate risk. The objective of this study was to evaluate the technique of estimating the parameter of the proportion, through the sequential Bayesian analysis and apply this method on data from psyllid infestation in the rosemary field. The technique is appropriate in this situation because in the field, the producer usually has some information that helps in the characterization of the area and thus the use of sample size estimation with fixed costs may increase. The criterion of stop of the sampling sequence was obtained starting from the quadratic loss function. The values of the population parameters Binomial were fixed in 0,1; 0,3; 0,7; and 0,9. It was studied via simulation the sensitivity of the Beta a priori distribution and the cost per observation. For extreme values were more influence by priori adopted. Since the proportions with intermediate values the estimates were closer of the actual value. The degree of informativeness of the prior was dependent on the cost. In the area of rosemary, which was evaluated, was obtained a proportion of infestation psyllids equal to 28.57% thereby obtaining the sample size same to 10 plant evaluated. It was concluded that the Bayesian sequential estimation technique is best suited for estimation of the proportion when the population value is farthest from the extreme values.
- **KEYWORDS:** Proportion; Beta distribution; loss function; posteriori variance.

¹ Universidade Federal de São João Del Rei – UFSJ, Departamento de Zootecnia, CEP: 36301-160, São João Del Rei, MG, Brasil. E-mail: carlabrighenti@ufsj.edu.br / naninha_mr@yahoo.com.br

² Apiário Brighenti Ltda. E-mail: deodorobrighenti@gmail.com