



ISBN 978-85-66836-16-5

DEVELOPMENT AND VALIDATION OF A NEW STANDARD AREA DIAGRAM SET TO ESTIMATE SEVERITY OF SOYBEAN RUST / Desenvolvimento e validação de uma nova escala diagramática para estimar severidade de ferrugem asiática da soja. V. T. Franceschi¹; S. M. Mazaro¹; H. S. S. Duarte²; C. V. Godoy³. ¹Federal Technological University - Paraná, Dois Vizinhos, Paraná state, Brazil, 85660-000. ²Federal University of Paraná, Curitiba, Paraná state, Brazil. ³Embrapa Soja, Londrina, Paraná state, Brazil. E-mail: viniciusfranceschi@outlook.com

Asian Soybean Rust (ASR), caused by the fungus *Phakopsora pachyrhizi* is the most important disease of soybean crop. The objective of this study was to develop a new Standard Area Diagrams Set (SADs) to evaluate ASR severity. The proposed SADs was composed of real and colored images and has 10 distinct levels of severity, distributed with a linear distribution (0.2, 3, 5, 10, 25, 40, 55, 70 and 84%). For the validation of the new SADs, 40 raters with no experience in the quantification of diseases were used and later were divided into two groups with 20 raters each. The validation consisted of two steps. In the first, the raters of the two groups estimated the severity of 50 leaves with different levels of severity without the use of SADs. In the second, using the same 50 leaves, one group estimated the severity values using the SADs published (Godoy et al., *Fitopatologia Brasileira*, 31:63-68, 2006) and another group made the estimates using the SADs proposed in this study. Lin's concordance correlation analysis was used to verify the accuracy and precision of the estimates. When the published SADs was used, only scale bias (v) and location bias (u) values were improved. However, when the proposed SADs was used, the values of scale bias (v), coefficient of bias (Cb), correlation coefficient (r) and Lin's concordance correlation coefficient (ρ_c) were improved. This shows that the proposed SADs provided more accurate and precise severity estimates. The reliability of the estimates was verified using the intra-class correlation coefficient (ρ) and mean inter-rater coefficient of determination (R^2). It was verified that with and without the use of published SADs the values of ρ and R^2 did not differ and with the use of the proposed SADs there was gain in reliability. The SADs proposed in this study improved the accuracy, precision and reliability of the evaluations.

Key words: Disease severity; Phytopathometry; *Phakopsora pachyrhizi*