TWO-STAGE SAMPLING FOR ASSESSMENT OF BROWN SPOT IN CASSAVA / Amostragem em dois estágios para avaliação da mancha marrom da mandioca.

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Brown spot (BS) of cassava (*Manihot esculenta*), mainly caused by *Passalora henningsii*, is an important disease in Brazilian Northeast. The objective of this study was to determinate the optimal sample size to assess severity of BS in field using a two-stage sampling design. Disease severity was determined in 34 commercial cassava fields located in Pernambuco state (northeast Brazil). In each field, a test area consisting of 30 rows and 50 plants per row was arbitrarily chosen. In each test area, 50 plants were sampled using a systematic method and the disease severity was assessed with the aid of a standard area diagram set on 15 leaves/plant. Data were analyzed as in a two-stage sampling design (leaves within plants and plants within the field). The optimum number of leaves and plants were calculated as a function of the variance components and cost function, considering three levels of error (5, 10 and 20%). BS severity in the fields ranged from 0.4 to 3.7%. In 10 fields the severity of BS was <1.0% and in six fields the severity was ≥2.0%. There was no significant correlation (P>0.05) between disease severity and sample size (number of leaves and number of plants). There was a negative correlation (r = -0.67, P<0.0001) between number plants and number of leaves to be sampled. Taking the average of 34 fields, the optimal sample size was 15 leaves per plant. Considering the acceptable errors of 5, 10 or 20%, the optimal sample sizes were 141, 35 and 9 plants, respectively, for each 0.5 ha of cultivated field. The sample sizes for assessment of BS severity on cassava derived from this study should be widely applicable across areas where this crop is cultivated, because the data were obtained from fields with a range of disease severities and conditions, and were estimated based on a range of needs requiring different accuracy.

Key words: *Manihot esculenta*; *Passalora henningsii*; Epidemiology; Plant disease sampling.