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Improvement of a field inoculation technique to assess partial resistance to *Sclerotinia sclerotiorum* in soybean.

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Appropriate techniques are crucial to assess plant disease resistance. The objective of this study was to develop and improve a field-based inoculation technique for sclerotinia stem rot in soybean (SSR). A small set of genotypes (10) differing in their reaction to SSR under other inoculation methods has been evaluated since 2003 using PGA plugs, brown rice and wheat kernels as inoculum support. The improved technique involves a unit of the mentioned mycelium-colonized support placed on a little piece of moistened cotton and attached with a tape onto a flower of the main stem of R₂-R₃ soybean plants. Sprinkler irrigation was provided in all trials. The lesion length on the main stem (LLMS) and wilt severity (WS) were registered since the third day after inoculation. Regardless of the inoculum support, effectivity for reproducing the disease has been proved both in field and greenhouse experiments (no disease escape). Genotypic differences ($0.06 > p > 0.0003$) were detected for LLMS (2 field trials), WS (3 field and 1 greenhouse trials) and disease incidence (1 field trial) between 2003 and 2005. Moreover, expected reaction from cultivars were confirmed in the field experiments. All these techniques differ from others previously described in that mycelial inoculation is made directly onto the flower with no wounding of plant tissues; and closely reproduce natural infection. Evaluation of disease must be done soon after inoculation (since 3 days after or before), otherwise differences could go undetectable later. Although infested rice grains and PGA plugs were successful, wheat kernels resulted better. They are a rich nutrient source; grain coat is harder than rice's, so they keep as a whole after autoclaving and shaking for homogenization; handling to assemble the inoculum device (tape, cotton and kernel) is easier and may be done and maintained in growth chamber for a few hours before inoculation; the crease in the kernel ensures accumulation of mycelium inside, which makes visualization and selection of the best kernels easier and quicker. More replications, environments and genotypes must be tested and complementation with other inoculation methods made. However, this technique promises more suitable than others for screening soybean germplasm with partial resistance to SSR.