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Selection of soil physical attributes spatially related with the grain yield common bean in Chapadão do Sul, MS, Brazil

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In Brazil, the common bean (Phaseolus vulgaris L.) is in one of the most representative farms, not only by the area under cultivation as well as the value of production. Thus, in the agricultural year 2010/2011, the Foundation of the Federal University of Mato Grosso do Sul (UFMS) Campus de Chapadão do Sul, we studied the variability and spatial dependence between physical properties of the soil and grain yield common bean under conventional tillage in Oxisol of Chapadão do Sul, Northeast region of Mato Grosso do Sul, Brazil. We also studied the linear and spatial correlations between these attributes, investigating conditions that provide increased agricultural productivity. For this, the area with the cultivation of common bean under conventional tillage installed a mesh containing 121 sampling points, with spacing of 5.0 x 5.0 m between them, a total area of 1600 m2. The grain yield common bean, with high variability, was found to average national standards. However, variability in soil physical attributes was higher, indicating that conventional tillage is a system that generates the heterogeneity of the environment, and the total porosity at a depth of 0.00 to 0.10 m is the attribute that might explain the average variability of grain yield.

Index terms: soil management, conventional tillage, soil physical attributes.