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Inorganic phosphorus in soil after four years of integrated systems of crop-livestock-forest

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The study was conducted in the 2015/2016 harvest at Embrapa Agrosilvopastoral in Sinop, MT. The evaluated systems were: eucalypt planted forest (F); exclusive crop (soybean) (L); pasture with brachiaria (P); and integrated systems of crop-livestock-forest (ICLF) established with eucalyptus provisions in triple lines ((3,5 x 3,0) x 30 m East-West orientation) with soybean crop annually. The experiment used a randomized block design with four replications. Soil samples were taken at the layers of 0-5, 5-10, 10-20, 20-30 cm. In the ICLF system, samples were collected in four equidistant transects per treatment in the transverse direction of the lines of forest species, at the distances of 1.5; 3; 6; 10 and 15 m on both sides (north and south faces). In the determination of Pi, Air-dried soil (0.5g) was weighed and placed in tubes with sodium carbonate solution (NaHCO_3 0.5 mol L⁻¹) for agitation. The quantification was realized by the blue molybdate method and the reading was realized by spectrophotometer. After meeting the assumptions (normality and homoscedasticity) the data were submitted to analysis of variance, the effects of the treatments unfolded by contrast and the distances in relation to the row of the trees compared through the standard error of the mean. Pi differs between the ICLF and the exclusive systems (F, L and P), in the depth up to 10 cm. The same occurs between the contrasts F vs (L+P), the L vs P. The contrast ICLF-L vs L differs only in the superficial layer of the soil (0-5cm) and the contrast F vs L only occurs difference in layer 0-20cm. The Pi has higher availability in the crop of the ICLF system and in the exclusive crop up to 10 cm of soil. In the ICLF, the levels of Pi in the superficial layers were smaller in the position 1.5 m away from the trees in the south and north face. Thus, up to the fourth year, in the ICLF there is still no pronounced effect of the forest component on the subsurface layers of the soil. However, it acts as a drain of Pi in the range of crops near the trees reducing the availability of P to the agricultural crop

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