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**Título:** Planning of the forest harvesting activities according to the environmental fragility

**Autores:** Stolle, Lorena; Lingnau, Christel; Bognola, Itamar Antonio; Ribas Junior, Ulisses; Vargas Das Neves, Kauê

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**Resumen:** The environment fragility can be considered basically for two reasons: a) potential, because of their inherent factors, such as topography, soil and climate, or b) conditional to a specific use, where there is the influence of human activities. The aim of this study was to create a model of environmental fragility using dependency networks and fuzzy logic which will assist in decision making regarding the planning of the forest harvesting activities in a pine forest plantations in order to decrease the impact of these activities on the environment. The model used information from the soil (amount of clay on the surface and subsurface layer, effective depth, A-horizon (A-depth), slope, precipitation intensity and forest cover (represented by the age of the plantation). These variables were evaluated for their influence in the processes of erosion and soil compaction. The first stage of work was to develop a dependency network and assign the fuzzy membership function for each of the variables included in the model, then proceed with the execution and evaluation by EMDS extension to the ArcGIS 9<sup>o</sup>, where the result is represented in space on a scale of values (true value) that ranges from -1 to 1 (more fragile even less fragile). This value was divided into three classes: -1 to -0.401 (high fragility), -0.400 to 0.400 (intermediate fragility) and 0.401 to 1 (low fragility). Two situations were simulated in the study area: a forest with 25 years of age in drier month (90 mm/month) and in the rainiest month (200 mm/month). The results showed that the areas with soil sandy texture, little depth, A-horizon of 16 cm, and slope of 45°, are considered of high fragility for the drier month and the rainiest, for the latter is a decrease of its true value (increased fragility). The areas with soil classified as low fragility (clayey, effective depth of 99 cm, A-horizon of 69 cm, and slope of 1.72°) there is a decline in the true value enough so this area was classified as intermediate fragility for the rainiest month, and for the drier month the area continue to be classified of a low fragility. It was concluded that the use of fuzzy logic is a useful tool to determine when and where the harvest can be performed because of the greater flexibility in data processing.

**Email:** lorenastolle@yahoo.com.br, lingnau@ufpr.br, iabog@cnpf.embrapa.br, u.ribas@battistella.com.br, kaue\_forest@hotmail.com