This diploma thesis goal is the achievement of an estimate of abandoned agricultural land in the Jeseník district and a proposed draft for its alternative use, such as energy-purpose crops cultivation. The estimate is based on the output of investigation, which was executed in the terrain of seven different territorial entities differing one from another by its physical-geographic and social-economic perspective, followed by the application of the investigation results in GIS surroundings. A satellite image classification is also a part of this work with its aim of comparison the land use according to statistical data versus actual situation.