Duku is one of horticultural crops and tropical fruits that has high commercial value. Actually, the trees that produce fruits have various age between 30 to 75 years. Some farmers reluctant to conduct replanting due to very long harvesting time, (15 years above). Government of Jambi Province intends to maintain and develop the duku through the crop improvements and extensification. For that purpose it needs to understand crop requirement related to land characteristic. The aims of this research are to identify land characteristics that associated to duku productivity, describe the optimum land characteristics to support maximum duku productivity, and to investigate the significance influence of land characteristics on optimum duku productivity. The study was conducted by field survey exploration approach, done March to December 2009. This study used primary and secondary data. Secondary data included climate and duku distribution in Jambi Province. Primary data was collected through field surveys, including biophysical properties and crop productivity. Data analysis used line boundary method analysis and discriminant analysis. Biophysical properties and productivity were plotted on scatter diagram and the distribution of points form a model of the boundary line. The model was selected with the highest determinant efficient (R²). The model of the biophysical properties and production relationship could determine land characteristics that associated with optimum productivity. The optimum productivity was associated with soil texture of sandy clay loam, loam, and clay loam, soil depth about > 56 cm, soil pH between 4.5 to 6.4, C organic content of > 0.60 %, CEC was about > 16,00 cmol/kg, base saturation was about > 5 %, available P was about > 3 ppm, exchangeable Ca content of > 0.50 cmol/kg, and Al saturation was about < 53%. The discriminant analysis show that duku productivity was significantly influenced by pH, CEC, sand content and exchangeable Ca.

Key words : Land Characteristic, Boundary line, Productivity, Duku.