# SPATIAL PREDICTION OF AGRICULTURAL FIRE RISK AREAS USING GIS AND REMOTE SENSING TECHNOLOGY IN DIEN BIEN PROVINCE, VIETNAM

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**Summary**

Fires in agricultural land can be a real ecological disaster, which threatens crops, causes economic loss, and makes distinctive impacts on the agriculture sector. Timely and accurate spatial explicit agricultural fire risk mapping is essential for prevention and suppression preparedness, resources allocation and better management of fires to reduce risks in agricultural industry. This study applied the Maximum Entropy algorithm (MaxEnt), using (MODIS) - Collection 6 MCD64A1 burned area product of NASA's Earth Science program (2003 - 2016), as well as GIS and remote sensed datasets of environmental condition to identify key variables associated with fire occurrence and construct the analysis of fire risk zoning over agricultural land of Dien Bien province where fires are most likely to occur and threat existing assets of local farmers. The results showed that most agricultural fires occurred in dry season (peaked in february and march), at elevation class of 500 m to 1,500 m. Our results showed that Isothrmality, precipitation of Wettest month and Mean temperature of coldest quarter factors are the most important variables in explaining the occurrence of agricultural fires. The map of potential fire occurrence indicated good discrimination between very highly susceptible, highly susceptible, moderately susceptible and lowly susceptible categories. The area of highly susceptible to fire was largest (approximately 144,000 ha), followed by the moderately susceptible category (73,000 ha), lowly susceptible category (33,000 ha) and very highly susceptible category (25,000 ha). The results indicated that the high proportion of agricultural land that is highly susceptible to fire in Dien Bien province and thus appropriate measures should be taken for each zone of different levels of fire susceptibility. This study contributed to enhance the understanding of agricultural fires and support farmers and mangers for better management of agricultural land in Dien Bien province.

**Keywords:** *Agricultural fire, climate, remote sensing, MaxEnt, Dien Bien, Vietnam*.