Montol Suwanprapha 2009: Application of Geographic Information Systems for Sustainable Agricultural Land Use Planning in Suphan Buri. Master of Science (Environmental Science), Major Field: Environmental Science, College of Environment. Thesis Advisor: Associate Professor Paiboon Prabuddham, Ph.D. 146 pages.

In order to obtain sustainable agricultural development of Suphan Buri province in the future, GIS computer program was introduced to evaluate Agricultural Potential Land Class (APLC) using 6 ratings of Elevation; 3 ratings of Irrigation system and 4 ratings of the Soil texture as indicators giving 5, 3 and 2 weights of the respective parameters. The 6 Elevation ratings used for ≤ 20, 21 – 40, 41 – 80, 81 – 160, 161 – 320 and > 320 m MSL are 5, 4, 3, 2, 1 and 0 respectively. The 3 Irrigation system ratings used for 100 %, 0 % + < 320 m MSL and 0 % + > 320 m MSL are 5, 2 and 0 respectively. The 4 Soil texture ratings used for clayey, loamy, sandy and slope complex + alluvium complex are 5, 3,1 and 0 respectively. All data are introduced to the program and layers of the proposed weights and ratings of the 3 parameters are overlaid and subdivided into 1 – 6 APLC, giving APLC 1 is the best and APLC 6 is the worst and for reserved forest only. Present land utilization to be Paddy Field (P), Other Agricultural Area (A), Urban Area (U), Forest Land (F) and Water Body (W) was also studied and evaluated for suitability to the APLC. Future sustainable agricultural land use planning of this province is also proposed and discussed. The summarized results are : (a) The APLC 1 – 6 are 56.43, 9.40, 12.98, 7.64, 3.84 and 9.71 percent respectively ; (b) The P, A, U, F and W lands used are 42.03, 33.18, 10.05, 11.87, and 2.87 percent respectively ; (c) Suitability of the lands used in the farmer paddy land which can also produce annual field crops without water erosion after rice in dry season, provided that aeration of the sticky paddy land is improved by rice husk application in each of the APLC 1 – 3 are unhappily reduced to only 59.47, 54.40 and 24.60 respectively; (d) Future land use planning of this province will be sustainable only when 6 major land groups: Commercial Farming (CF), Sufficient Framing (SF), Urban (U), Biomass Gasification Power Plant (BGPP), Commercial Forest (CFo) and the Reserve Forest (RF) are enforced; and (e) when pipe line irrigation system is developed and US urban standard is introduced, this future province land use could be 74.65, 2.07, 11.02 and 12.20 percent for the CF, U, CFo and RF respectively; and (f) This correct land use will be successful or sustainable agriculture obtainability of this province and other ones of the Central Plain by laws reformation to implement fairly for the plan is also suggested.