LAND SUITABILITY FOR DAIRY CATTLE FARM SELECTION USING SPATIAL ANALYSIS AND ANALYTICAL HIERARCHY PROCESS
(Case Study: Bener Meriah District, Nanggroe Aceh Darussalam Province)

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A Thesis submitted for the degree of Master of Science
Of Bogor Agricultural University

MASTER OF SCIENCE IN INFORMATION TECHNOLOGY FOR
NATURAL RESOURCES MANAGEMENT
GRADUATE SCHOOL
BOGOR AGRICULTURAL UNIVERSITY
August 2008
STATEMENT

Hereby I, Panjitesna Prawiradiputra, do declare that this thesis entitled "Land Suitability for Dairy Cattle Farm Selection Using Spatial Analysis and Analytical Hierarchy Process (Case Study: Bener Meriah District, Nanggrooe Aceh Darussalam Province)" is my own work and has not been submitted in any form or another degree or diploma programs (course) to any university or other institution. The content of the thesis has been examined by the advising committee and the external examiner.

Bogor, August 2008

Panjitesna Prawiradiputra
ABSTRACT


Best area for dairy cattle farm in Bener Meriah district, Nanggro Aceh Darussalam province has been discovered by using Spatial Analysis and Analytical Hierarchy Process (AHP). Bener Meriah district has potential areas to develop dairy cattle farm since that area is located in highland. Milk as product of dairy cattle can be alternative income for local people to increase their prosperity. Spatial Analysis is used to find candidates of most suitable areas in the district based on physical factors such as construction, water supply, climate and soil factors. Beside Spatial Analysis, Carrying Capacity test is performed to ensure the candidates area able to carry dairy cattle. Analytical Hierarchy Process (AHP) is used to select the most suitable area for dairy cattle farm from those candidates based on experts’ judgments. Economic factors such as marketing and cooperation availability and technical factors such as distance to town and road condition are considered as factors to be judge in Analytical Hierarchy Process. Based on experts’ judgment, marketing is considered as the most important factor. The final result is an area as large as 11 hectares width in Kute Lintang village. Feasibility study in this area is needed to ensure the area proper in marketing, milk processing industry and waste management.

Keyword: dairy cattle farm, GIS, Analytical Hierarchy Process
SUMMARY


Bener Meriah district in Nanggroe Aceh Darussalam province is located in Highland, that is suitable to develop dairy cattle farm. To find best location of dairy cattle farm, physical factors should be considered such as rainfall, temperature, settlements, availability of roads, land cover, altitude and water supply. Beside physical factors, there are technical factors such as road condition and distance to town, economical factors such as marketing and cooperation availability and carrying capacity factors.

Overlying physical factors is resulted three candidates area for dairy cattle farm and two candidate areas for pastures. Those areas are Area A, located in Kute Lintang village and area B and C that located in Reje Guru village. Analytical Hierarchy Process (AHP) is used to decide the best location from those candidate areas. AHP calculates the priorities of technical factors and economical factors that given by the experts.

According to AHP calculation, marketing is discovered as the most important factor and Area A, located in Kute Lintang village as the most suitable location for dairy cattle farm. Second best is area C and the third one is area B, both located in Reje Guru Village.

Since there are good places in Bener Meriah district to develop dairy cattle farm, local government support in infrastructures, loans and experts are needed to help farmers through livestock sector. In the other hand, if local government develops more infrastructures such as road network, more suitable areas for dairy cattle farm will discovered.
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CURRICULUM VITAE

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