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RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

Title: **Geospatial Modeling of Site Suitability for Pond-Based Tilapia and Clarias Farming in Uganda**

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Seven criteria (water requirement, water temperature, soil texture, terrain slope, potential farm gate sales, availability of farm inputs, and access to local and regional markets) were analyzed to determine site suitability for tilapia and clarias farming in Uganda. Crisp and fuzzy approaches of criterion classification were implemented using GIS, and the results were compared. There was a statistically significant difference between maps generated by crisp and fuzzy approaches. For both the crisp and the fuzzy approaches, over 98% of the land was classified as moderately suitable or suitable. Overall, the crisp method classified 16,322 hectares (0.09%) as very suitable compared to zero hectares (0%) by the fuzzy method. Simultaneously, the crisp method gave 297,344 hectares (1.96%) as unsuitable compared to 168,592 hectares (0.96%) by the fuzzy method. Of the 138 surveyed fishponds that were operational, the crisp method classified 71% as suitable and 29% as moderately suitable, while the fuzzy method classified 71.7% as suitable and 28.3% as moderately suitable.

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