ABSTRACT

The agricultural sector is a key economic driver in East Halmahera Regency, supported by the extensive area of rice fields or Sustainable Food Agricultural Land (LP2B), which remains actively managed by farmers. However, according to data from the Indonesian Disaster Data and Information (DIBI) system and the Regional Disaster Management Agency (BPBD), East Halmahera Regency is prone to flood disasters. These flood events increasingly impact paddy fields, representing one of the critical effects of climate change on the agricultural sector. Such events result in reduced harvest areas and significant declines in rice production. Given the potential for recurring flood disasters, a comprehensive assessment of the risks faced by Sustainable Food Agricultural Land (LP2B) is essential. This study aims to evaluate the levels of flood hazard, vulnerability, capacity index, and overall flood risk in the Wasile Sub-district.

The methods used in this study included the Analytical Hierarchy Process (AHP) and Spatial Multi-Criteria Evaluation (SMCE) as the basis for weighting overlay in ArcGIS to create maps for each indicator, such as hazard level, vulnerability level, capacity index, and flood risk level for Sustainable Agricultural Land (LP2B). These methods were supported by field observations and interviews with several farmers in Cemara Jaya Village, Mekar Sari Village, Bumi Restu Village, and Batu Raja Village. Additionally, distributing questionnaires using a Likert scale served as supplementary data to complete the research requirements.

The results of the study in Cemara Jaya Village, Mekar Sari Village, Bumi Restu Village, and Batu Raja Village, Wasile District, indicate that the flood hazard level is categorized as high, with an index value of 3.10. The vulnerability level is also categorized as high, with an index value of 2.54. Meanwhile, the farmers' capacity level falls under the medium category, with an index value of 0.839. These three indicators were analyzed to determine the flood risk level in LP2B of Wasile District, which was classified as high, with an index value of 9.39.

Keywords: LP2B, AHP, SMCE, Flood Risk

ABSTRAK

Sektor pertanian menjadi salah satu sektor unggulan di Kabupaten Halmahera Timur, hal ini didukung oleh banyaknya luas lahan sawah atau Lahan Pertanian Pangan Berkelanjutan (LP2B) yang tersedia dan masih dikelolah oleh petani. Berdasarkan pencatatan Data dan Informasi Bencana Indonesia (DIBI) dan Badan Penanggulangan Bencana daerah (BPBD) Kabupaten Halmahera Timur berpotensi terjadi bencana banjir. Bahaya banjir juga semakin sering berdampak pada lahan sawah, yang merupakan salah satu dampak dari perubahan iklim terhadap sektor pertanian. Berdasarkan potensi bencana banjir yang terjadi tentunya membutuhkan kajian lebih lanjut terkait risiko lahan pertanian pangan berkelanjutan (LP2B) terhadap banjir. Penelitian ini bertujuan untuk mengidentifikasi tingkat bahaya, kerentanan, indeks kapasitas, dan tingkat risiko banjir di Kecamatan Wasile.

Metode yang digunakan yaitu AHP dan SMCE sebagai dasar pembobotan *overlay* di ArcGIS untuk pembuatan peta setiap indikator seperti tingkat bahaya, tingkat kerentanan, indeks kapasitas dan tingkat risiko banjir terhadap LP2B. Hal tersebut didukung dengan observasi lapangan dan wawancara terhadap beberapa petani yang terdapat di Desa Cemara Jaya, Desa Mekar Sari, Desa Bumi Restu, dan Desa Batu Raja. Selain itu, pembagian kuesioner dengan menggunakan skala likert menjadi data pendukung dalam kelengkapan data yang dibutuhkan pada penelitian ini.

Hasil dari penelitian di Desa Cemara Jaya, Desa Mekar Sari, Desa Bumi Restu, dan Desa Batu Raja, Kecamatan Wasile menunjukkan bahwa tingkat bahaya banjir dikategorikan tinggi dengan nilai indeks 3.10. Tingkat kerentanan tergolong tinggi dengan nilai indeks 2.54. Sementara tingkat kapasitas petani tergolong sedang dengan nilai indeks 0.839. Ketiga indikator tersebut dianalisis untuk menghasilkan tingkat risiko banjir di LP2B Kecamatan Wasile, hasilnya tergolong tinggi dengan nilai indeks 9.39.

Kata kunci: LP2B, AHP, SMCE, Risiko Banjir