Monitoring New Buildings in Taiwan's Agricultural District from 2019 to 2022

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In Taiwan, there are approximately 680 thousand hectares of farmland available for food or agricultural production. According to the agriculture and farmland resource inventory, only 570 thousand hectares of farmland were actually cultivated, while the remaining 110 thousand hectares were not used for agricultural purposes. Farmland loss is becoming a significant issue in Taiwan. The coexistence of farmland and factories in the same area can potentially compromise the quality of agricultural production and the overall development of agriculture in Taiwan. As a result, safeguarding farmland has become an urgent problem that needs addressing.Therefore, the objective of this study is to swiftly identify buildings on agricultural land and comprehend the distribution of new constructions using remote sensing technology. To monitor new buildings in Taiwan's agricultural districts from 2019 to the first half of 2022, with the base year as 2016, various satellite imagery sources were utilized. Rapideye imagery was employed in 2019, followed by Planet imagery in 2020, and Kompsat3, Kompsat3A, and Planet imagery in the years 2021 to 2022, for building interpretation within the agricultural districts. The respective image resolutions for Rapideye, Planet, Kompsat3, and Kompsat3A are 6.5m, 3m, 2.8m, and 2.2m. The monitoring results indicate that the area of new buildings in Taiwan's agricultural districts from 2019 to the first half of 2022 is approximately as follows: 1360, 860, 1795, and 392 hectares. Statistical analysis reveals that the area of new buildings in Taiwan's agricultural regions over the past four years will peak in 2021 and exhibit a downward trend in 2022. Most of these newly added buildings are located near urban and rural areas or around industrial zones, presumably indicating a connection to economic development. To mitigate farmland loss, we will persist in monitoring new constructions within agricultural districts and furnish analytical data to government agencies for the purpose of agricultural maintenance and management, ultimately safeguarding the ecological balance.

Keywords: Object-based Image Analysis, Building Interpretation, Agricultural District