

Land-use change and irrigation systems in the agricultural landscape of terraced paddy fields in Awaji Island, central Japan

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Abstract We analyzed changes in land use from 1963 to 2000 in the northern part of Awaji Island in central Japan, using topographical maps and aerial photographs. We compared these changes between two different irrigation systems: *tazu*, in which a community group jointly owns the rights to a water source, and private management. The study area consisted of 57.3% paddy field, 22.2% woodland, 7.2% urban land use, 6.3% grassland, 5.8% water body, and 1.2% dry field in 1963. In 2000, the area consisted of 44.3% paddy field, 21.0% woodland, 12.6% urban land use, 11.6% grassland, 5.3% water body, and 5.0% dry field. The proportion of agricultural use had decreased markedly over the 37-year period. In the *tazu* area, 38.1 and 37.7% of former paddy field had changed into urban land use and grassland, respectively, and 19.3% of former paddy field had become dry field by 2000. In contrast, 30.6% of former rice paddy had become dry field in the private management area. About half of the former rice paddy had changed into grassland (26.3%) and urban land use (24.0%) in the private area, and 18.6% had become woodland in 2000. In the *tazu* area, there were fewer abandoned fields, because farmers still manage their fields according to strict regulations. In the private management area, the set-aside or abandoned fields had changed into woodlands as a result of vegetation succession, because farmers had abandoned fields located far from their homes or on steep slopes. These results suggest that the irrigation system may influence the pattern of change in land use.

Keywords Awaji Island - Land-use change - Irrigation system - Pond