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## Clubroot Affects Both Agriculture and Tourism in Kagoshima Prefecture, Japan

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Both agriculture and local tourism of Kagoshima prefecture where is located on the south-western region of the Japanese mainland, are the important industries. Although cabbage (*Brassica oleracea*) has been cultivated in recent decades in Kagoshima, clubroot disease caused by *Plasmodiophora brassicae* had never been observed. However, the disease in cabbage was reported in four regions last couple years. Our survey showed that one region is infested severely whereas others are slightly. In the most widely infested region, the disease was also observed in turnip rape (*Brassica rapa*) which is grown as ornamental plants for landscape design in early spring and important tourist attraction. Consequently, both agriculture and local tourism are damaged by clubroot. The increase of clubroot incidence in this region might be caused by significant increase of cabbage production, the expansion of cropping season throughout the year and continuous turnip rape cultivation in the same fields of cabbage for almost three decades. Therefore we are trying to estimate the risk of clubroot damage cultivation throughout the year in this region. We collected five isolates of resting spores and identified them as race 3, 4 and 9 by Williams' method, and as pathotype group 3 and 4 by classification system using clubroot resistant (CR) F<sub>1</sub> cultivars of Chinese cabbage as differential hosts as described in Hatakeyama et al.(2004). Furthermore, we found that these populations were avirulent to commercial CR cabbages. These results indicate that introduction of CR cabbage and breeding of turnip rape are the effective measures to solve our problem.