

Distribution of mating types of *Phytophthora colocasiae* in Japan

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Purpose: In 2014, *Phytophthora* leaf blight of taro suddenly occurred in taro main production areas, Kagoshima, Miyazaki and Ehime prefectures of Japan. Furthermore, the disease has expanded to Saitama and Chiba prefectures since 2017. The pathogen, heterothallic *Phytophthora colocasiae*, is reported to be mainly A2 type all over the world. In preliminary test of Japanese isolates, we found self-fertile isolates as well as A1 type isolates. In this study, we investigated the distribution of the mating type in Japan.

Methods: The mating culture was performed on 20% V8 juice agar (V8A) medium using A1 (He-A1) and A2 (He-A2) type strains obtained in the preliminary test. The single culture were also prepared to determine a self-fertilization. The pathogenicity test was conducted on the detached taro leaf. The mycelial plug from the colony margin on V8A medium were placed on the leaf and measured the length of the lesion from the inoculated agar plug.

Results: All of 40 isolates in Chiba and Saitama were A2 type. On the other hand, 188 isolates from Kagoshima, Miyazaki and Ehime included He-A1 (8 isolates), He-A2 (108 isolates) and self-fertile (SF; 72 isolates). Out of 32 fields in which multiple isolates were examined, He-A1 and He-A2, He-A2 and SF, and He-A1, He-A2 and SF isolates were simultaneously obtained in two, 16 and five fields, respectively. The virulence was compared among the mating types, He-A1, He-A2, and SF. Although a variation in the virulence was found among the isolates, He-A1 isolates tended to be low virulent.

Conclusion: He-A1 and SF isolates as well as He-A2 isolates were found in Japan. Furthermore, different mating types co-existed in the same fields. The results indicate that oospore will be a survival structure in field soils and taro tuber seeds. An invasion of He-A1 and SF isolates or an occurrence of a mutation to SF isolates might contribute to a quick expansion over the main taro production areas.