Title:
3026- Availability of Sex Distinguishing Markers in Actinidia spp

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Abstract body text:
Kiwifruit (Actinidia spp.) is a dioecious species and male and female kiwifruits are morphologically similar in juvenile phase. Sex-linked markers have been required to increase the efficiency of breeding in kiwifruit. Although sex-linked markers have been developed in kiwifruits, those markers are not widely used in kiwifruit breeding. Thus, the present study was performed for reproducibility of previously developed sex-linked markers in 6 kiwifruit species, including A. arguta (tetraploid), A. chinensis (diploid and tetraploid), A. deliciosa (hexaploid), A. eriantha (diploid), A. macroasperma (diploid), and A. polygama (diploid). A total of 7 sex-linked markers, including 1 female-specific simple sequence repeat (SSR) marker (A001), 1 male-specific sequence-characterized amplified regions (SCAR) marker (SmY), 2 male-specific PCR markers (aC36306 and kC72369), 2 SSR markers (A002 and A003) that can distinguish the sex, and 1 SCAR marker (SmX) which targets the X chromosome, were applied. PCR amplification and 2% agarose gel electrophoresis were performed following the protocols of each marker. As a result, SSR markers (A001, A002, and A003), and kC72369 could not distinguish the sex. The DNA fragment of SmX male and female species must be confirmed, but it was only confirmed in diploid A. chinensis and hexaploid A. deliciosa. SmY could distinguish the male species including A. arguta, A. deliciosa, and A. chinensis. However, aC36306 could only distinguish male A. arguta. These results suggested that the previous sex determination markers have low reproducibility according to ploidy level as well as kiwifruit species. Thus, development of species-specific sex-linked markers is required for efficient kiwifruit breeding.