

A New codominant CAPS marker for sex genotype identification in asparagus

DNA marker to reduce the time required for asparagus breeding

Overview

Garden asparagus is a dioecious species, with male [XY] and female [XX] individuals. Since male individuals are preferred over females for agricultural production, all-male cultivars have agronomic advantages over mixed-sex cultivars.

To produce an all-male cultivar, it is important to obtain a supermale [YY]. Given their morphological similarities, males and supermales are usually distinguished by genetic analysis.

Although two sex-linked codominant markers (Asp2-SP6 and RM17) have been reported previously, their ability to distinguish the sex in *A. officinalis* and other dioecious *Asparagus* species was limited.

We developed a new CAPS marker (SSM01). SSM01 is applicable for discrimination between X- and Y-specific sequences in various *A. officinalis* and purple asparagus cultivars, also in three dioecious *Asparagus* species.

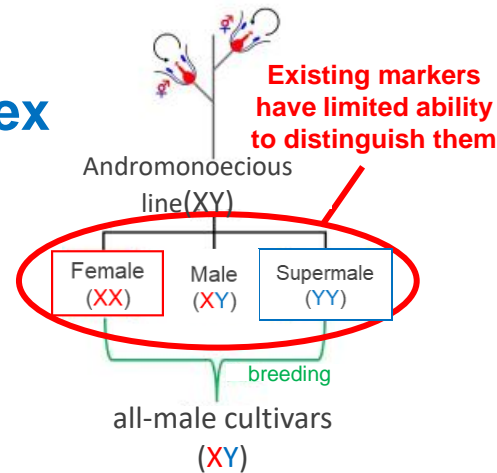
Product Application

- Producing an all-male cultivar of *A. officinalis*, purple asparagus, or other dioecious *Asparagus* species

IP Data

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Fig.1 Methods to produce an all-male cultivar

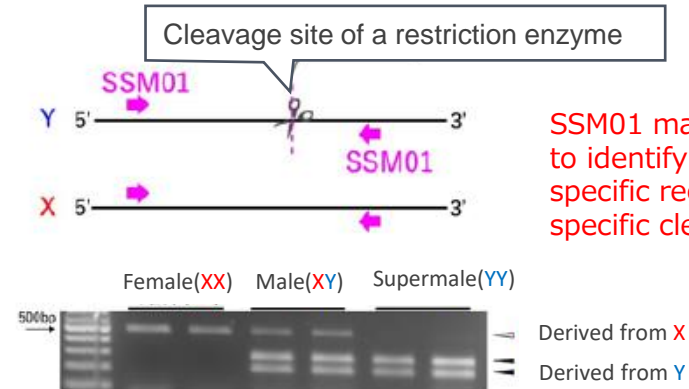


Asp1-T7 marker
 JJSBS 80:308-313 (2011)
 Necessary of real-time PCR, poor quantitative difference.

RM17 marker
 Acta Hort. 1223:51-58 (2018)
 Limited use for discrimination between the sex genotypes of some cultivars.

We developed a new marker applicable for discrimination between the sex genotypes of purple asparagus cultivars or other cultivars

Fig.2 Discrimination between X- and Y-specific sequences



SSM01 marker was able to identify X- and Y-specific regions by Y-specific cleavage

Related Works

[1] Akahori, M., Kanno, A. Euphytica 218, 75 (2022).
<https://doi.org/10.1007/s10681-022-03029-5>

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