

Technology Licensing Opportunity

Non-Confidential Summary



Male-Sterile Tomato Line ROI# 95-001

Opportunity:

Researchers at the University of Saskatchewan have developed a male-sterile tomato line that increases the accuracy of hybrid seed production and significantly reduces labor costs.



Background:

Tomato hybrid seed production is typically performed by manual emasculating of flowers followed by pollination. This is labour intensive and does not guarantee 100% hybridity. Tomato male sterility can be induced by genetic engineering but the flowers still require emasculating. Although there are many tomato male-sterile systems available, the majority are not used on a commercial scale because of the difficulties in maintaining pure male-sterile lines.

Invention:

A genetic male-sterile line (7B-1) in tomato that is photoperiod-sensitive has been isolated. 7B-1 flowers are 100% male-sterile and have exposed stigma for easy pollination.

Under certain photoperiods, fertile pollen is produced which is used for generating pure male-sterile seeds that can be used directly as the female parent for tomato hybrid seed production.

Use of the 7B-1 line and the incorporation of the trait into other tomato lines eliminates the need for manual flower emasculating and results in significant cost savings for tomato hybrid seed production.

The 7B-1 line has been grown in diverse geographic locations around the world and seed germination tests have shown resistance to various abiotic stresses.

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Researcher profile:



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Professor, Department of Biology

Research interests:

Physiological and proteomic studies of male sterility, pollen development, flower development, microscopy and tissue culture.

Selected Publications (7B-1 tomato line):

1. Fellner, M., Sawhney, V.K. Seed germination in a tomato male-sterile mutant is resistant to osmotic, salt and low-temperature stresses. *Theoretical and Applied Genetics* 102 (2-3), 215-221, 2001.
2. Fellner, M., Sawhney, V.K. The 7B-1 mutant in tomato shows blue-light-specific resistance to osmotic stress and abscisic acid. *Planta* 214 (5), 675-682, 2002.
3. Sawhney, V.K. Photoperiod-sensitive male-sterile mutant in tomato and its potential use in hybrid seed production. *Journal of Horticultural Science and Biotechnology* 79 (1), 138-141, 2004.
4. Sheoran, I.S., Ross, A.R.S., Olson, D.J.H., Sawhney, V.K. Differential expression of proteins in the wild type and 7B-1 male-sterile mutant anthers of tomato (*Solanum lycopersicum*): A proteomic analysis. *Journal of Proteomics* 71 (6), 624-636, 2009.

Development Stage:

Proprietary germplasm available for commercial licensing or sale.

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