



TOMATO
(Solanum lycopersicum)

Proposed denomination: 'Provine'
Application number: 19-10043
Application date: 2019/11/13
Applicant: Nunhems B.V., Nunhem, Netherlands
Agent in Canada: Aventum IP Law LLP, Ottawa, Ontario
Breeder: B. C. H. J. Silvertand, Herten, Netherlands

Variety used for comparison: 'Trevine'

Summary: *The plants of 'Provine' are medium to tall while those of 'Trevine' are tall. The leaflet of 'Provine' is medium to large while that of 'Trevine' is large. The intensity of green colour on the upper side of the leaf of 'Provine' is medium to dark while it is medium for that of 'Trevine'.*

Description:

SEEDLING: anthocyanin colouration of hypocotyl present

PLANT: indeterminate growth type, medium to tall, flowers mid-season, late fruit maturity

STEM: very weak to weak intensity of anthocyanin colouration, medium to long internode

LEAF: horizontal attitude, medium to long, medium width, bipinnate blade type

LEAF BLADE (UPPER SIDE): medium to dark green, weak to medium degree of glossiness, weak to medium degree of blistering

LEAFLET: medium to large, erect to semi-erect attitude of petiole in relation to main axis of leaf

INFLORESCENCE: mainly uniparous type

PEDUNCLE: abscission layer absent

FLOWER: yellow, pubescence of style present

IMMATURE FRUIT: green shoulder absent, light green skin (excluding shoulder), no green stripes

MATURE FRUIT: medium to large, small length to diameter ratio, oblate shape in longitudinal section, weak ribbing at peduncle end, medium depression at peduncle end, medium sized peduncle scar, very small to small blossom scar, flat at blossom end, medium diameter core (in cross-section) in relation to total diameter when viewed from above, medium thickness of pericarp, two and three locules, red, strong glossiness of skin, red flesh, firm to very firm

DISEASE REACTIONS: resistant to *Verticillium* sp. (Va and Vd) race 0, *Fusarium oxysporum* f. sp. *lycopersici* race 0 (ex1), race 1 (ex 2), *Fusarium oxysporum* f. sp. *radicis lycopersici*, *Fulvia fulva* (ex *Cladosporium fulvum*) race 0, group A, B, C, D and E, Tomato Mosaic Virus strains 0, 1 and 2 and *Oidium neolycopersici* (On) (ex *Oidium lycopersicum* (Ol)); no resistance to *Meloidogyne incognita*, *Fusarium oxysporum* f. sp. *lycopersici* race 2 (ex 3), *Phytophthora infestans*, Tomato Yellow Leaf Curl Virus, and Tomato Spotted Wilt Virus race 0

Origin and Breeding: 'Provine' (breeder's reference NUN 09196 TOF) originated by a controlled cross of two proprietary parent lines in Nunhem, Netherlands. The cross was made in the summer of 2015 and repeated multiple times. This variety was selected for its fruit quality factors such as glossy skin, firmness, cluster shape, shape, calyx colour and consistent production and yield.

Tests and Trials: The detailed description of 'Provine' is based on the UPOV report of Technical Examination, application number TMT3160, purchased from the Naktuinbouw in Roelofarendsveen, Netherlands. The trial was conducted by the Naktuinbouw in Roelofarendsveen, Netherlands in 2017.



Tomato: 'Provine' (right) with reference variety 'Trevine' (left)



Tomato: 'Provine'



Tomato: 'Provine'

Proposed denomination: 'TO16-0010'
Application number: 20-10151
Application date: 2020/04/16
Applicant: Vineland Research and Innovation Centre, Vineland Station, Ontario
Breeder: Valerio Primomo, Toronto, Ontario

Varieties used for comparison: 'Merlice', 'TO16-0113' and 'TO16-0053'

Summary: *The leaf attitude of 'TO16-0010' is erect to semi-erect while that of 'Merlice' is semi-erect to horizontal. The length to diameter ratio of the fruit of 'TO16-0010' is moderately compressed to medium while that of 'Merlice' is medium to moderately elongated. In longitudinal section, the fruit shape of 'TO16-0010' is oblate to circular while that of 'TO16-0113' is flattened. At the peduncle end, the degree of ribbing of the fruit of 'TO16-0010' is absent or very weak while that of 'TO16-0113' is medium and that of 'TO16-0053' is weak. At the peduncle end, the depression of the fruit of 'TO16-0010' is weak while it is medium for that of 'TO16-0113'. At the blossom end, the fruit shape of 'TO16-0010' is indented to flat while that of 'Merlice' is flat to pointed. The plants of 'TO16-0010' are susceptible to *Oidium lycopersicum* while those of 'TO16-0113' are resistant.*

Description:

SEEDLING: anthocyanin colouration of hypocotyl present

PLANT: indeterminate growth type, flowers early season, mid-season fruit maturity

LEAF: erect to semi-erect attitude, bipinnate division of blade

PEDUNCLE: abscission layer absent

FLOWER: yellow

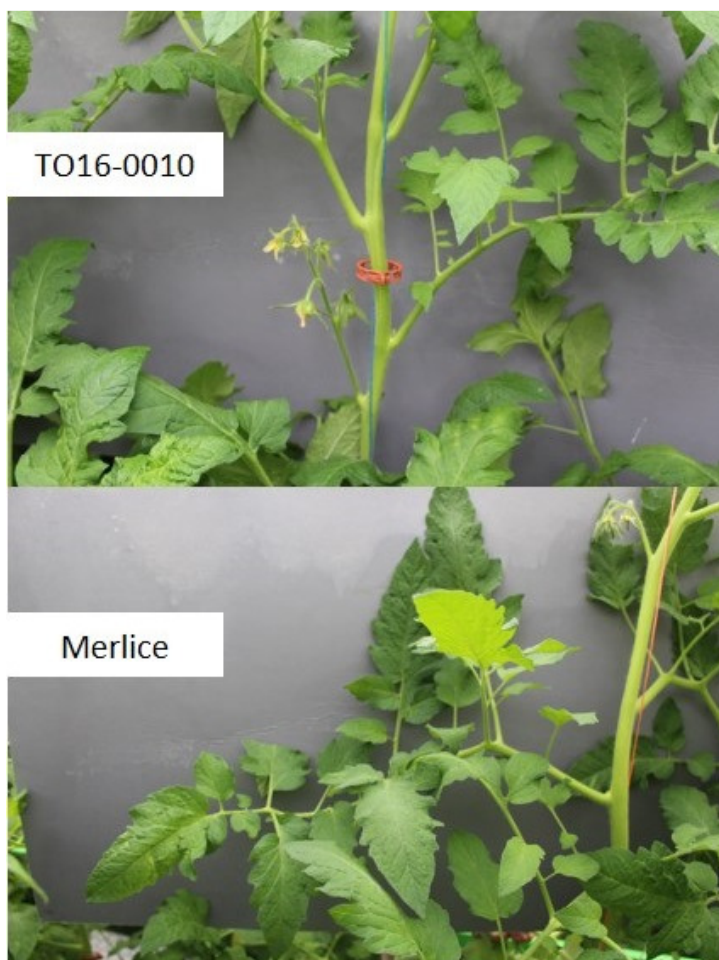
IMMATURE FRUIT: green shoulder absent, light green, no green stripes

MATURE FRUIT: medium size, moderately compressed to medium length to diameter ratio, oblate to circular shape in longitudinal section, absent or very weak degree of ribbing at peduncle end, weak depression at peduncle end, indented to flat at blossom end, between three and six locules, red, red flesh, medium firmness

DISEASE REACTIONS: resistance to *Fusarium oxysporum* f. sp. *lycopersici* race 0 (ex1) and race 1 (ex 2) present, resistance to *Oidium neolyopersici* (On) (ex *Oidium lycopersicum* (OI)) absent

Origin and Breeding: ‘TO16-0010’ originated from a controlled cross conducted by Valerio Primomo at the Vineland Research and Innovation Centre located in Vineland, Ontario. The cross was made in 2016 between two proprietary inbreds. In 2017, ‘TO16-0010’ was included in hybrid screening trials in Vineland, Ontario and further trialed in Vineland and Leamington, Ontario in 2018 and 2019. The hybrid tomato variety ‘TO16-0010’ was selected in November 2018 for its uniform fruit clusters, fruit yield, shelf-life, colour, flavour and disease resistance.

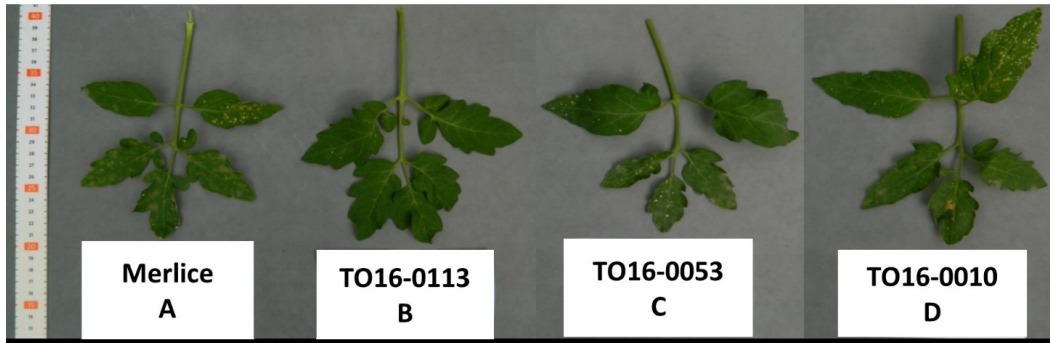
Tests and Trials: The comparative trials for ‘TO16-0010’ were conducted in the same greenhouse and row (trough) in 2021 and 2022 at the Vineland Research and Innovation Centre in Vineland, Ontario. The trials included a total of 24 plants each of the candidate and reference varieties. Each plot contained 12 plants with 2 replicates. The plot was 4 metres squared, with 3 heads per metre squared in 40 metre long rows. All plants were grown in 10 cm rockwool blocks spaced 25 cm apart and grafted onto Kaiser rootstock with the cotyledon pinched. The observations and measurements were taken from 24 plants, or parts of plants, of each variety from February 15 to June 24 in 2021 and from February 28 to June 16 in 2022. Disease resistances were assessed in separate disease nurseries on 23 plants for *Fusarium oxysporum* f. sp. *lycopersici* race 0 (ex1) and race 1 (ex 2), and 32 plants for *Oidium neolyopersici* (On). Assessments were based on the standards used to describe disease susceptibilities.



Tomato: ‘TO16-0010’ (top) with reference variety ‘Merlice’ (bottom)



Tomato: 'TO16-0010' (left) with reference variety 'Merlice' (right)



Tomato: 'TO16-0010' (right) with reference varieties 'Merlice' (left), 'TO16-0113' (middle left) and 'TO16-0053' (middle right)

Proposed denomination: 'TO16-0053'
Application number: 20-10152
Application date: 2020/04/16
Applicant: Vineland Research and Innovation Centre, Vineland Station, Ontario
Breeder: Valerio Primomo, Toronto, Ontario

Varieties used for comparison: 'Merlice', 'TO16-0113' and 'TO16-0010'

Summary: *In longitudinal section, the fruit shape of 'TO16-0053' is oblate while that of 'Merlice' is circular and that of 'TO16-0113' is flattened. At the peduncle end, the degree of ribbing of the fruit of 'TO16-0053' is weak while that of 'Merlice' and 'TO16-0010' is absent or very weak and that of 'TO16-0113' is medium. At the peduncle end, the depression of the fruit of 'TO16-0053' is weak while it is medium for that of 'TO16-0113'. At the blossom end, the fruit shape of 'TO16-0053' is indented to flat while that of 'Merlice' is flat to pointed. The plants of 'TO16-0053' are susceptible to Oidium lycopersicum while those of 'TO16-0113' are resistant.*

Description:

SEEDLING: anthocyanin colouration of hypocotyl present

PLANT: indeterminate growth type, flowers early season, mid-season fruit maturity

LEAF: semi-erect to horizontal attitude, bipinnate division of blade

PEDUNCLE: abscission layer absent

FLOWER: yellow

IMMATURE FRUIT: green shoulder absent, light green, no green stripes

MATURE FRUIT: medium size, medium length to diameter ratio, oblate shape in longitudinal section, weak degree of ribbing at peduncle end, weak depression at peduncle end, indented to flat at blossom end, three or four locules, red, red flesh, medium to firm

DISEASE REACTIONS: resistance to *Fusarium oxysporum* f. sp. *lycopersici* race 0 (ex1) and race 1 (ex 2) present, resistance to *Oidium neolyopersici* (On) (ex *Oidium lycopersicum* (OI)) absent

Origin and Breeding: ‘TO16-0053’ originated from a controlled cross conducted by Valerio Primomo at the Vineland Research and Innovation Centre located in Vineland, Ontario. The cross was made in 2016 between two proprietary inbreds. In 2017, ‘TO16-0053’ was included in hybrid screening trials in Vineland, Ontario and further trialed in Vineland and Leamington, Ontario in 2018 and 2019. The hybrid tomato variety ‘TO16-0053’ was selected in November 2018 for its uniform fruit clusters, fruit yield, shelf-life, colour, flavour and disease resistance.

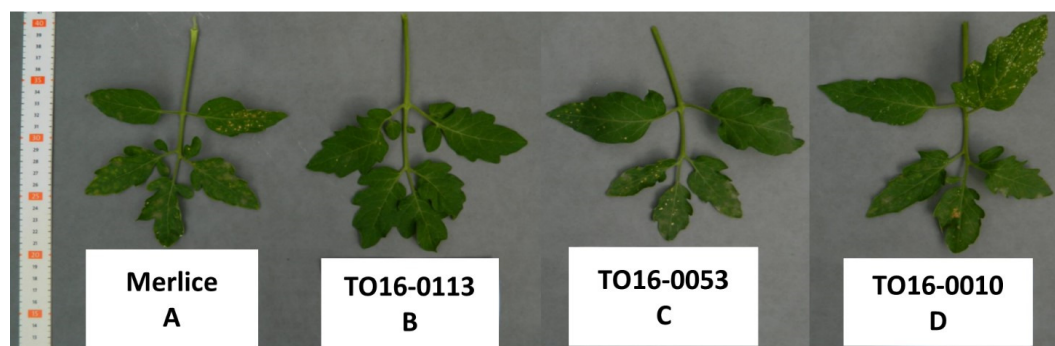
Tests and Trials: The comparative trials for ‘TO16-0053’ were conducted in the same greenhouse and row (trough) in 2021 and 2022 at the Vineland Research and Innovation Centre in Vineland, Ontario. The trials included a total of 24 plants each of the candidate and reference varieties. Each plot contained 12 plants with 2 replicates. The plot was 4 metres squared, with 3 heads per metre squared in 40 metre long rows. All plants were grown in 10 cm rockwool blocks spaced 25 cm apart and grafted onto Kaiser rootstock with the cotyledon pinched. The observations and measurements were taken from 24 plants, or parts of plants, of each variety from February 15 to June 24 in 2021 and from February 28 to June 16 in 2022. Disease resistances were assessed in separate disease nurseries on 23 plants for *Fusarium oxysporum* f. sp. *lycopersici* race 0 (ex1) and race 1 (ex 2), and 32 plants for *Oidium neolyopersici* (On). Assessments were based on the standards used to describe disease susceptibilities.



Tomato: ‘TO16-0053’ (left) with reference variety ‘Merlice’ (right)



Tomato: ‘TO16-0053’ (left) with reference variety ‘Merlice’ (right)



Tomato: 'TO16-0053' (middle right) with reference varieties 'Merlice' (left), 'TO16-0113' (middle left) and 'TO16-0010' (right)

Proposed denomination: 'TO16-0113'

Application number: 20-10153

Application date: 2020/04/16

Applicant: Vineland Research and Innovation Centre, Vineland Station, Ontario

Breeder: Valerio Primomo, Toronto, Ontario

Varieties used for comparison: 'Merlice', 'TO16-0053' and 'TO16-0010'

Summary: *The fruit of 'TO16-0113' is moderately compressed while that of 'Merlice' is medium to moderately elongated. In longitudinal section, the fruit shape of 'TO16-0113' is flattened while that of 'Merlice' is circular. At the peduncle end, the degree of ribbing of the fruit of 'TO16-0113' is medium while that of 'Merlice' and 'TO16-0010' is absent or very weak to weak and that of 'TO16-0053' is weak. At the peduncle end, the depression of the fruit of 'TO16-0113' is medium while it is weak for that of the reference varieties. At the blossom end, the fruit shape of 'TO16-0113' is indented to flat while that of 'Merlice' is flat to pointed. The fruit of 'TO16-0113' matures mid to late season while that of 'Merlice' matures early to mid-season. The plants of 'TO16-0113' are resistant to *Oidium lycopersicum* while those of the reference varieties are susceptible.*

Description:

SEEDLING: anthocyanin colouration of hypocotyl present

PLANT: indeterminate growth type, flowers early to mid-season, mid to late season fruit maturity

LEAF: semi-erect to horizontal attitude, bipinnate division of blade

PEDUNCLE: abscission layer absent

FLOWER: yellow

IMMATURE FRUIT: green shoulder absent, light green, no green stripes

MATURE FRUIT: medium to large, moderately compressed length to diameter ratio, flattened shape in longitudinal section, weak to medium degree of ribbing at peduncle end, medium depression at peduncle end, indented to flat at blossom end, three or four locules, red, red flesh, medium firmness

DISEASE REACTIONS: resistance to *Fusarium oxysporum* f. sp. *lycopersici* race 0 (ex1) and race 1 (ex 2), *Oidium neolyopersici* (On) (ex *Oidium lycopersicum* (OI)) present

Origin and Breeding: 'TO16-0113' originated from a controlled cross conducted by Valerio Primomo at the Vineland Research and Innovation Centre located in Vineland, Ontario. The cross was made in 2016 between two proprietary inbreds. In 2017, 'TO16-0113' was included in hybrid screening trials in Vineland, Ontario and further trialed in Vineland and Leamington, Ontario in 2018 and 2019. The hybrid tomato variety 'TO16-0113' was selected in November 2018 for its uniform fruit clusters, fruit yield, shelf-life colour, flavour and disease resistance.

Tests and Trials: The comparative trials for 'TO16-0113' were conducted in the same greenhouse and row (trough) in 2021 and 2022 at the Vineland Research and Innovation Centre in Vineland, Ontario. The trials included a total of 24 plants each of

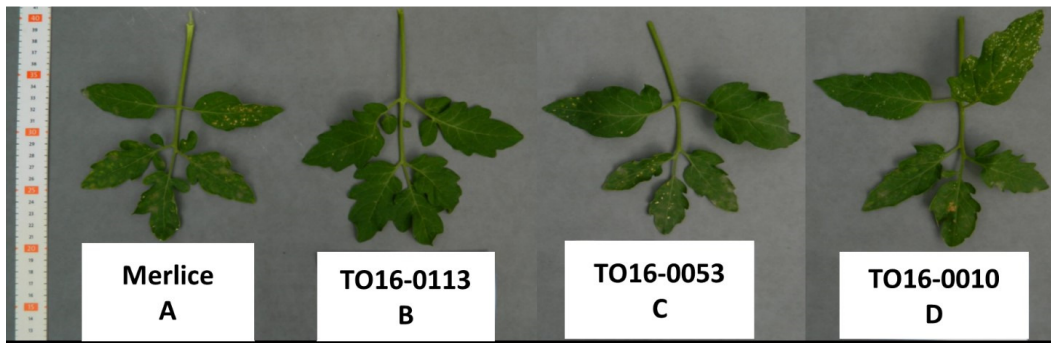
the candidate and reference varieties. Each plot contained 12 plants with 2 replicates. The plot was 4 metres squared, with 3 heads per metre squared in 40 metre long rows. All plants were grown in 10 cm rockwool blocks spaced 25 cm apart and grafted onto Kaiser rootstock with the cotyledon pinched. The observations and measurements were taken from 24 plants, or parts of plants, of each variety from February 15 to June 24 in 2021 and from February 28 to June 16 in 2022. Disease resistances were assessed in separate disease nurseries on 23 plants for *Fusarium oxysporum* f. sp. *lycopersici* race 0 (ex1) and race 1 (ex 2), and 32 plants for *Oidium neolyopersici* (On). Assessments were based on the standards used to describe disease susceptibilities.



Tomato: 'TO16-0113' (left) with reference variety 'Merlice' (right)



Tomato: 'TO16-0113' (left) with reference variety 'Merlice' (right)



Tomato: 'TO16-0113' (middle left) with reference varieties 'Merlice' (left), 'TO16-0053' (middle right) and 'TO16-0010' (right)