

# CULTIVAR & GERMPLASM RELEASES

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## 'Val-Tex 39' and 'Val-Tex 40': Autumn Lettuce Cultivars for Southern Texas

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The lettuce industry in the Lower Rio Grande Valley (LRGV) of southern Texas began in 1946 with ≈16.5 ha; 5 years later, hectareage had risen to 6200 ha. Since that time, production has ranged from 250 to 8000 ha, with current production of ≈1000 ha. Lettuce in the LRGV is primarily produced for the U.S. winter market and shipped from November through April. To maintain this harvest duration, three planting periods are required: mid-September to early October, mid-October to mid-November, and late November to mid-December. Each planting period requires specifically adapted cultivars.

The objective of this breeding program was to develop cultivars adapted to the first production period, which is harvested from mid/late-November to early January. Adaptation to the semi-desert conditions of southern Texas requires heat tolerance, slow bolting, tipburn resistance, and resistance to downy mildew (*Bremia lactucae* Regl.), particularly races 5 and 6 (Sleeth and Leeper, 1966; Jones and Leeper, 1971). 'Val-Tex 39' and 'Val-Tex 40' were developed to replace 'Great Lakes 659' and 'Great Lakes 6238' (Bohn and Whitaker, 1951), which dominate the autumn market. The name Val-Tex indicates the Rio Grande Valley of Texas; 39 and 40 were incidental plot numbers.

### Origin

'Val-Tex 39' and 'Val-Tex 40' were developed by a modified pedigree method that included two hybridizations and repeated single-plant selections. The original male parent was USDA breeding line 46712-3; an F<sub>3</sub> selection from a cross between 'Great Lakes 66' and DMR-D, a downy mildew-resistant genotype (T.W. Whitaker, personal com-

ated for 2 seasons and named 'Val-Tex 39' and 'Val-Tex 40', respectively, in the F<sub>15</sub> generation (Fig. 1).

### Description

'Val-Tex 39' and 'Val-Tex 40' are "Type 2" crisphead lettuces, as defined by the Great Lakes cultivars (Ryder, 1987). Frame and wrapper leaves are bright medium green with serrated margins. In our judgment, leaf texture, thickness, crispness, and flavor are essentially the same as 'Great Lakes 659'. Leaf midribs are flatter and straighter than the Great Lakes type, similar to the Vanguard type (Type 3) (Ryder, 1987). 'Val-Tex 39' and 'Val-Tex 40' have deeper and rounder heads than most of the Great Lakes strains. Internally the heads are golden yellow.

Both cultivars carry resistance to races 5 and 6 of downy mildew (*Bremia lactucae* Regl.) and have greater resistance to premature bolting than 'Great Lakes 659' or 'Great Lakes 6238'. 'Val-Tex 39' and 'Val-Tex 40' averaged greater yields and head mass, less tipburn, and required fewer harvests than the Great Lakes cultivars over 2 seasons in Weslaco, Texas (Table 1). Seed dormancy of September-planted lettuce is a greater problem with 'Val-Tex 39' and 'Val-

munication). Single-plant selection was practiced within breeding line 46712-3 and all subsequent progeny until F<sub>11</sub>, when W552-1 was selected (Fig. 1). In this generation, W552-1 was crossed as the male parent with breeding line W644, a fourth generation selection from PI 274-900. From this cross, single-plant selection was practiced for 10 generations until W78-175-1 and W78-175-16 were identified as acceptable breeding lines for the early fall planting. Single-plant selection was again practiced until F<sub>13</sub>, with C-39M selected from W78-175-1, and C-40M from W78-175-16. These lines were evalu-

Table 1. Comparison of economic traits of 'Val-Tex 39' and 'Val-Tex 40' with the standard Great Lakes cultivars grown in the lower Rio Grande Valley of Texas.<sup>2</sup>

Cultivar	Fresh yield (mg·ha <sup>-1</sup> )	Head wt (kg/head)	Tipburn (%)	Marketable heads at first harvest (%)
	<i>Mean ± SE</i>			
Val-Tex 39	60.2 ± 18.9	1.2 ± 0.06	13.3 ± 5.8	72.7 ± 6.4
Val-Tex 40	58.8 ± 8.9	1.1 ± 0.04	13.3 ± 5.8	76.0 ± 6.0
Great Lakes 659	42.0 ± 14.1	1.0 ± 0.02	35.0 ± 21.2	36.0 ± 14.0
Great Lakes 6238	42.1 ± 9.1	1.1 ± 0.16	24.0 ± 15.2	30.3 ± 16.9

<sup>2</sup>Based on two sites over 2 years, with two replications per site.

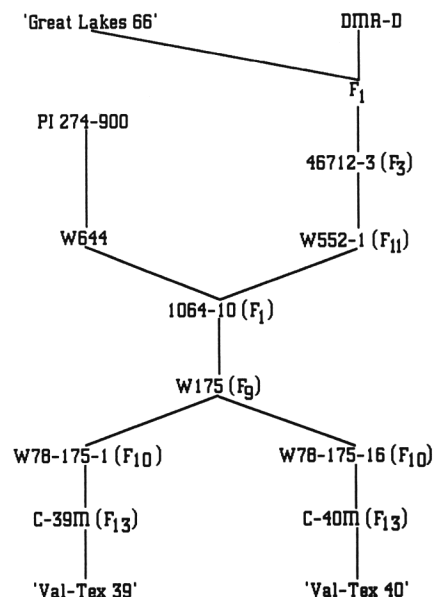


Fig. 1. Pedigree of 'Val-Tex 39' and 'Val-Tex 40'.

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Tex 40' than with some of the Great Lakes cultivars. Transplanted fields perform better than those direct-seeded in this planting period.

#### **Availability**

Foundation seed was distributed to 10 seed companies in 1984 and is currently available from Shamrock Seed Co., Salinas, Calif.,

and Peta Seed Co., Woodland, Calif. Breeders seed has also been deposited in the USDA lettuce cultivar collection held in Salinas, Calif.

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