

New Disease Resistant Tomatoes

improved strains of varieties Pearson and Red Top developed in plant breeding program at Davis and released to seedsmen

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Two new strains of Pearson tomato—Pearson VF6 and VF11—developed and released to the seedsmen are resistant to *Fusarium* and *Verticillium* wilts.

The new strains were developed by crossing Southland and Utah Experimental Hybrid Number 59-1 to obtain resistance to *Fusarium* wilt and *Verticillium* wilt. The seedlings of this combination were inoculated with fungi which cause the two diseases. Plants carrying the factors for resistance to both diseases were crossed to Pearson for seven generations. The second generation—F₂—seedlings of the last Pearson backcross were grown in the field at Davis, and 23 selections were made for horticultural characters as well as resistance to both diseases. From all of these strains, six and eleven were selected for this release.

The two new strains are quite similar to Pearson in their performance, except where either one or both of the wilt diseases were prevalent. The differences in yield shown in the two tables are considered to be due to *Verticillium* wilt as *Fusarium* wilt was not a factor in these trials. The data in the lower table were furnished by the University's Farm Advisors in the areas.

The soluble solids have usually been slightly higher and the color slightly better in the resistant strains than in Pearson. This is probably due to the better retention of the leaves. One quite consistent difference observed is that



Plant of Red Top V9 tomato with central leaves removed.

both of the new strains have smaller cores than Pearson, which might influence their ability to stand up in handling.

Fruit measurements in 1957 showed a polar-to-equatorial diameter ratio of 0.867 for Pearson VF11 and 0.858 for

Pearson VF6. The Pearson VF6 strain has less stem cavity, giving it the appearance of being a deeper fruit. For this reason it is now preferred by shippers for fall shipment of green wrap tomatoes.

A strain of Red Top, resistant to *Verticillium* wilt, has been developed by the Department of Vegetable Crops at Davis, named Red Top V9 and released to seedsmen. The Red Top V9 strain was developed by crossing Red Top with an early small-vine *Verticillium* resistant Red Top type plant and selecting for Red Top characters combined with resistance. This new strain has a slightly smaller vine and matures a few days earlier. Leaf cover is definitely improved where *Verticillium* is prevalent. The photograph shows a typical plant of Red Top V9 and the set of fruit.

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Results of Yield and Quality Tests at Davis

	1957			1958			Av.		
	1957	1958	Av.	1957	1958	Av.	1957	1958	Av.
	Yield			Solids			Color		
Pearson	28.3	22.5	25.4	5.6	5.9	5.75	26.5	26.5	26.50
Pearson VF6	33.3	34.0	33.6	6.3	6.1	6.20	27.5	27.0	27.25
Pearson VF11	35.0	35.6	35.3	5.8	6.1	5.95	27.0	26.5	26.75
	Wholeness			Ascorbic Acid			pH		
Pearson	18.5	18.8	18.6	25.5	21.0	23.0	4.58	4.40	4.49
Pearson VF6	19.0	18.8	18.9	24.0	22.0	23.0	4.56	4.40	4.48
Pearson VF11	19.0	18.8	18.9	23.0	17.0	21.0	4.63	4.41	4.52

Yield of Pearson Strains at Different Locations—1958

Location	Pearson	Pearson VF6	Pearson VF11
Woodland	22.7	24.3	26.3
Davis	22.5	34.0	35.6
Courtland	23.0	33.2	31.0
Linden	23.1	27.8	28.2
Tracy	16.8	19.7	19.1
Brentwood	20.5	21.9	24.3
San Jose	17.4	21.7	18.1
Saticoy	15.2	14.1	16.9
Average	20.1	24.6	24.9